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Message

As one of Japan's leading research universities, Kumamoto University promotes some of the world's most advanced research projects. The International Research Organization for Advanced Science and Technology (IROAST) was established in April 2016 with the aim of further enhancing the university's international research capabilities in the natural sciences (science and technology).

IROAST has selected four primary research areas (nano material science, green energy, environmental science, and advanced green bio), which are natural sciences in which the university excels. The organization promotes joint research projects with top-class universities and research institutions around the world associated with these research fields, and fosters young talented researchers to lead the future of the university. To bolster international joint research, IROAST invites researchers who are active at the forefront of their field at overseas universities and research institutions to serve as distinguished professors who promote joint research and provide research guidance to graduate school students. In order to foster young researchers, the organization operates a tenure-track system and assigns researchers to overseas universities and research institutions on a long-term basis with the aim of building international networks. IROAST also promotes interdisciplinary research projects between departments, including collaborations between the fields of medicine, science, and engineering. Through these efforts, the organization has achieved numerous outstanding results.

This pamphlet provides a summary of IROAST's activities to date. If you are interested in our activities or joint research projects, please feel free to contact us. We look forward to forming a new partnership with you.

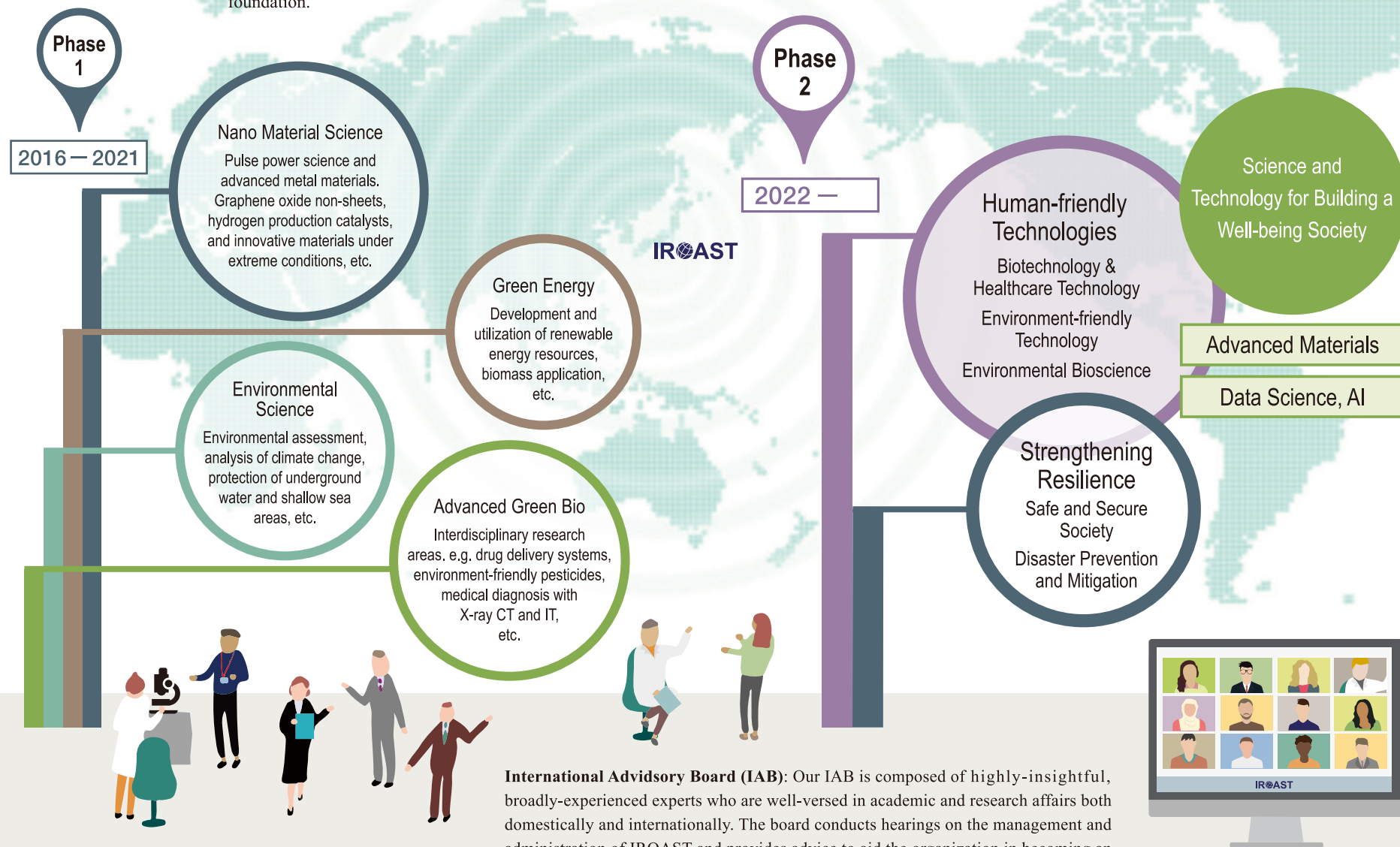
Kazuki TAKASHIMA, Director, IROAST



Overview

We have designated the four areas listed below as the priority research areas for **Phase 1**, a period of six years beginning from 2016. Our goals during this phase are to enhance our international competitiveness in terms of research by developing distinctive, leading-edge research projects, and to foster creative young researchers to serve as the driving force for international research based on our internationally superior research foundation.

During **Phase 2**, beginning from 2022, we plan to further develop and enhance our projects as an international research hub for the natural sciences, and engage in international research activities focused on the science and technology needed to build a society that provides safety, security, and well-being, with the goal of realizing Society 5.0, which will support the next generation of natural sciences.



Three Missions

01

The cultivation of talented young researchers to lead the future

Under our tenure-track system, we recognize and foster talented young researchers through an international open call for participants. During the tenure-track period, participants serve as Principal Investigators (PI) by personally leading international joint research projects, establish international joint research networks with overseas researchers and researchers in different fields, and enhance their skills in research and educational activities by participating in joint research projects with postdoctoral researchers and providing research guidance to graduate students. We are also working to foster young researchers with a high level of international competence via our Program for Young Faculty Members for International Joint Research, through which we send young researchers overseas, as well as by aiding participants in submitting academic papers in English and offering internship programs to provide research guidance to graduate students and young researchers from overseas.



02

The establishment of strong international joint research networks and promotion of international joint research

In collaboration with research organizations in the natural sciences at the university, we promote international joint research with world-class universities and research institutions. We hire the world's leading researchers as distinguished professors, and grant internationally renowned researchers the title of visiting professor or visiting associate professor, and we contribute to the promotion and development of the university's research activities from an international perspective by engaging in joint research, holding international seminars, and providing intensive lectures for graduate students. In addition, with the aim of establishing academic, cutting-edge international joint research networks, we also promote joint research by aiding IROAST tenure-track faculty members, other Kumamoto University faculty members, distinguished professors and visiting professors in forming research units.



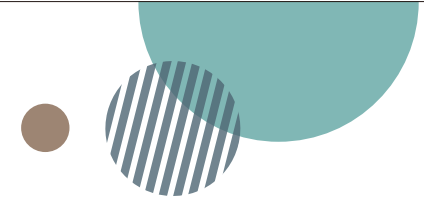
03

The development of leading, cutting-edge research projects through interdisciplinary integration

Research units led by young researchers are attracting the attention of researchers in other fields due to research into the development of wearable sensors for monitoring cardiac functions as well as the multifaceted application of imagery in collaboration with universities and medical institutions in Singapore. In addition, in collaboration with researchers from Australia and South Korea, we advanced research into functional nano materials for efficient treatment of tumors, and published the co-authored findings in top-level international journals. Furthermore, joint research conducted by researchers affiliated with both organizations is now underway, including holding joint seminars with the International Research Center for Medical Sciences (IRCMS). We have also begun collaborations with the humanities and social sciences.



Researchers (as of November 1, 2021)



Director



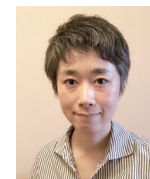
Dr. Kazuki TAKASHIMA
International Research Organization
for Advanced Science and Technology

Vice Director



Dr. Kei TODA
Professor,
Faculty of Advanced Science and Technology

Postdoctoral Researchers



Dr. Akiko NAKAMASU
International Research Organization
for Advanced Science and Technology

Distinguished Professors



Dr. Konstantinos KONTIS
Professor, Head of the Aerospace Sciences Division,
Sir Henry Mechan Chair of Engineering,
School of Engineering,
University of Glasgow, UK

Tenure-track Professor



Dr. Mitsuhiro AIDA
International Research Organization
for Advanced Science and Technology



Dr. Mizuki YAMADA
International Research Organization
for Advanced Science and Technology



Dr. László PUSZTAI
Scientific Advisor,
Wigner Research Centre for Physics, Hungary

Tenure-track Associate Professors



Dr. Ruda LEE
International Research Organization
for Advanced Science and Technology

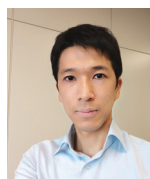


Young Faculty Members for International Joint Research

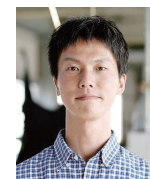
Dr. Takahiro HOSONO
Professor,
Faculty of Advanced Science and Technology



Dr. Yufeng ZHENG
Professor,
Department of Materials Science and Engineering,
College of Engineering, Peking University, China



Dr. Hiroki MATSUO
International Research Organization
for Advanced Science and Technology



Dr. Kei ISHIDA
Associate Professor, Center for Water Cycle,
Marine Environment and Disaster Management



Dr. Dmitri Aleks MOLODOV
(from December 1, 2021)
Professor,
Institute of Physical Metallurgy and Metal Physics,
RWTH Aachen University, Germany



Dr. Gaochuang CAI
International Research Organization
for Advanced Science and Technology




Dr. Mizue MUNEKATA
Associate Professor,
Faculty of Advanced Science and Technology





Dr. Yuta NAKASHIMA
Associate Professor,
Faculty of Advanced Science and Technology


Visiting Professors / Visiting Associate Professors (as of November 1, 2021)


■ Visiting Professors

 ① Dr. U Rajendra ACHARYA
Senior faculty member
Ngee Ann Polytechnic, Singapore

 ② Dr. José E. ANDRADE
Professor
California Institute of Technology (Caltech), USA


 ③ Dr. Josep-Lluís BARONA-VILAR
Professor
Institute of History of Medicine and
Science López Piñero (IHMC),
University of Valencia, Spain

 ④ Dr. Pouyan BOUKANY
Associate Professor
Delft University of Technology, Netherlands


 ⑤ Dr. Olivier BOUTIN
Professor
Deputy Director M2P2, Director Master Chemical
Engineering,
M2P2 Laboratory, Aix Marseille University, France


 ⑥ Dr. Paul BOWEN
Professor
School of Metallurgy and Materials,
University of Birmingham, UK

 ⑦ Dr. Pierre BREUL
Professor
University of Clermont Auvergne, France


 ⑧ Dr. Maria Jose COCERO
Professor
Chemical Engineering & Environmental Technology,
The University of Valladolid, Spain

 ⑨ Dr. Marc DE BOISSIEU
Director
SIMaP, CNRS, Université Grenoble Alpes, France

 ⑩ Dr. Patrice DELMAS
Associate Professor
Department of Computer Science,
The University of Auckland, New Zealand


 ⑪ Dr. Martin DIENWIEBEL
Heisenberg-Professor
Applied Nanotribology,
Karlsruhe Institute for Technology (KIT), Germany


 ⑫ Dr. Martino DI SERIO
Professor
University of Naples Federico II, Italy


 ⑬ Dr. Derek ELSWORTH
Professor
Department of Energy and Mineral Engineering and
of Geosciences,
The Pennsylvania State University, USA


 ⑭ Dr. Carolina ESCOBAR
Professor
Department of Environmental Sciences
University of Castilla La Mancha, Spain

 ⑮ Dr. Amir A. FARAJIAN
Professor
Department of Mechanical and Materials Engineering,
Wright State University, USA


 ⑯ Dr. Etsuko FUJITA
Senior Chemist
Chemistry Division,
Brookhaven National Laboratory, USA


 ⑰ Dr. Tomonari FURUKAWA
Professor
Department of Mechanical and Aerospace Engineering,
University of Virginia, USA


 ⑱ Dr. Hamid GHANDEHARI
Professor
Director of Utah Center for Nanomedicine,
Professor of Department of Pharmaceutics and Pharmaceutical
Chemistry and Bioengineering,
University of Utah, USA


 ⑲ Dr. Olivier HAMANT
Research Director
INRA, RDP, ENS Lyon, France


 ⑳ Dr. Christian HARDTKE
Professor
Department of Plant Molecular Biology,
University of Lausanne, Switzerland


 ㉑ Dr. Jens HARTMANN
Professor
Institute for Geology, Universität Hamburg, Germany

 ㉒ Dr. Yuichiro HIMEDA
Prime Senior Researcher
Carbon-based Energy Carrier Research Team,
Global Zero Emission Research Center, National Institute of
Advanced Industrial Science and Technology, Japan

 ㉓ Dr. Dragos HORVATH
CNRS Research Director
Laboratory of Chemoinformatics UMR7140,
University of Strasbourg, France

 ㉔ Dr. Ryushiro KASAHARA
Professor
Department of Life Science, Fujian Agriculture and
Forestry University, China

 ㉕ Dr. Yang KIM
Emeritus professor
Kosin University, Korea

 ㉖ Dr. Alexei KUZMIN
Head of Laboratory
EXAFS Spectroscopy Laboratory
Institute of Solid State Physics, University of Latvia, Riga,
Latvia

 ㉗ Dr. Ick Chan KWON
Presidential Scholar
Department of Cancer Biology, Dana Farber Cancer Institute,
Harvard Medical School, USA
Principal Research Scientist
Biomedical Research Institute, Korea Institute of Science and
Technology (KIST), Korea



28 Dr. Youn-Woo LEE
Professor
School of Chemical and Biological Engineering,
Seoul National University, Korea



29 Dr. Pavel LEJČEK
Professor
Institute of Physics, Academy of Sciences of the Czech
Republic, Czech Republic
University of Chemistry and Technology, Prague, Czech
Republic



30 Dr. Viren Ivor MENEZES
Professor
Department of Aerospace Engineering,
Indian Institute of Technology Bombay, India



31 Dr. Matthieu MICOULAUT
Professor
Sorbonne University, France



32 Dr. Dmitri Aleks MOLODOV
Professor
Institute of Physical Metallurgy and Metal Physics,
RWTH Aachen University, Germany



33 Dr. Rahul Raveendran NAIR
Professor
Materials Physics
National Graphene Institute and School of Chemical
Engineering and Analytical Science
The University of Manchester, UK



34 Dr. Reiko ODA
Research Director
CBMN UMR5248, CNRS,
University of Bordeaux, France



35 Dr. Shie-Ming PENG
Distinguished Research Professor
National Taiwan University, Taiwan



36 Dr. Ramesh Shanmughom PILLAI
Professor
Department of Molecular Biology,
University of Geneva, Switzerland



37 Dr. Zoran REN
Professor
Faculty of Mechanical Engineering,
University of Maribor, Slovenia



38 Dr. Christian RENTENBERGER
Associate Professor
Faculty of Physics,
University of Vienna, Austria



39 Dr. Stelios RIGOPOULOS
Reader in Thermofluids
Department of Mechanical Engineering,
Imperial College London, UK



40 Dr. Shirley SHEN
Principal Research Scientist
Commonwealth Scientific and Industrial Research
Organisation (CSIRO), Australia



41 Dr. Atsushi URAKAWA
Professor
Delft University of Technology (TU Delft), Netherlands



42 Dr. Gioacchino (Cino) VIGGIANI
Professor
Solid Mechanics and Civil Engineering,
Université Grenoble Alpes, France



43 Dr. Thomas WAITZ
Associate University Professor
Faculty of Physics, University of Vienna, Austria



44 Dr. Andrew WHITTLE
Professor
Department of Civil and Environmental Engineering,
Massachusetts Institute of Technology, USA



45 Dr. Zhenghe XU
Dean
College of Engineering,
Southern University of Science and Technology, Shenzhen, China
Teck Professor
Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Canada



46 Dr. Firuz ZARE
Professor
Power and Energy Group,
The University of Queensland, Australia



47 Dr. Bo LIU
Professor
Department of Plant Biology,
2167 Life Sciences,
University of California Davis, USA

Visiting Associate Professors



48 Dr. Tomoyasu MANI
Assistant Professor
Department of Chemistry, University of Connecticut, USA



49 Dr. Hiroko SATOH
Researcher
Department of Chemistry,
University of Zurich (UZH), Switzerland
Associate Professor
Research Organization of Information and
Systems (ROIS), Japan



50 Dr. Daniel P. ZITTERBART
Assistant Scientist
Woods Hole Oceanographic Institution, USA
Lecturer
University of Erlangen-Nuremberg, Germany



case 01

Bioimaging analysis of stomatal movement

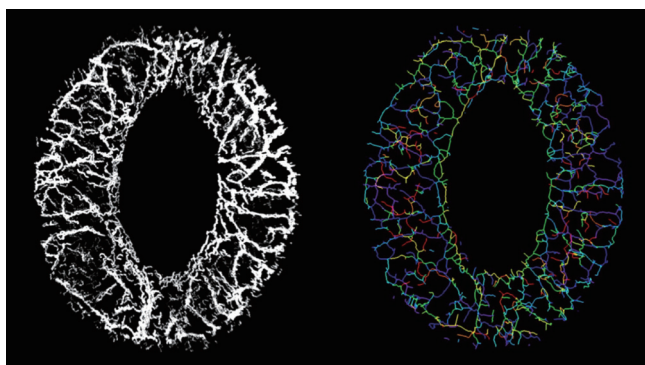


Associate Professor
Takumi HIGAKI

The stomata on plant leaf and stem surfaces are essential to plant survival as they are responsible for gaseous exchange and transpiration. The stomatal apertures open and close in response to environmental cues. We are aiming for a better understanding of the cell biological basis of stomatal movement using advanced bioimaging and image analysis techniques.

Research Keywords

Stomatal movement
Bioimaging
Bioimage analysis



case 02

Theranostic nano platform for cancer treatment

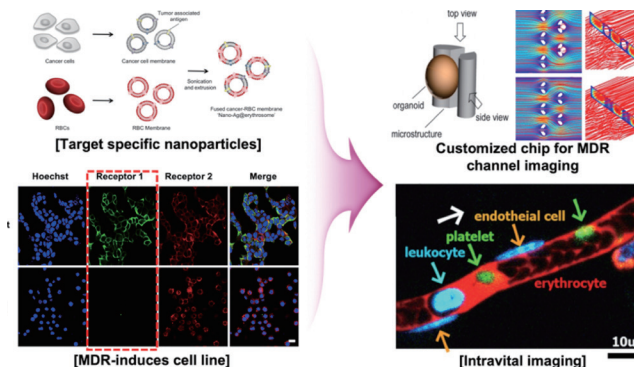


Associate Professor
Ruda LEE

Theranostics is a rapidly developing field that combines the unique opportunities offered by nanotechnology with precision medicine to provide significantly improved treatment efficacy with reduced off-target effects. This accomplished through the specific delivery of therapy to diseased areas, and by imaging the diseased tissue, diagnosing conditions and detecting inflamed cancer cells at an earlier stage, while simultaneously being able to treat the disease.

Research Keywords

Nanomedicine
Nanotechnology
Theranostics



Sustainable Development Goals (SDGs) are a set of 17 international goals and 169 targets for the period from 2016 to 2030 established with the aim of addressing globally-shared social challenges and realizing a sustainable world. IROAST researchers engage in interdisciplinary research that transcends the barriers between fields of study as well as original research projects related to energy, environmental issues, materials, resources, safety, and security. Their results are capable of contributing to solving the global issues indicated by the SDGs. IROAST is committed to contributing to the establishment of a society that provides safety, security, and well-being by broadly reapplying our vast stock of knowledge gained through research activities in ways that benefit society.



case 03

Palm-sized medical device achieving cancer diagnosis from 1 mL whole blood

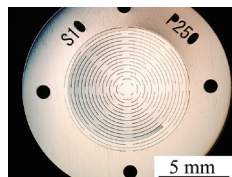
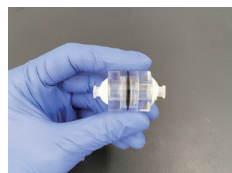


Associate Professor
Yuta NAKASHIMA

Detecting cancer at an early stage is essential to effective treatment. Our research group has developed a palm-sized medical device that can offer a cancer diagnosis from 1mL of whole blood. This device was developed by mechanical and chemical means. Currently, we are gathering experimental data for actual clinical use. The practical application of this device will make it possible to detect cancer easily and earlier, and is expected to contribute significantly to cancer treatment.

Research Keywords

Cancer diagnosis
Cancer detection
Biomicrodevice
Palm-sized device
Biomedical engineering



case 04

Environmental dynamics analysis on a regional scale



Professor
Takahiro HOSONO

Global environmental changes are critical concerns in today's world. Natural disasters such as flooding that are linked to these environmental changes are increasingly occurring. To tackle these issues and mitigate the damage to society, it is essential to accurately understand the causes and mechanisms of the systems that generate these problems. Our laboratory investigates a variety of issues involved based on aspects of earth system sciences by introducing multidisciplinary approaches.

Research Keywords

Global environmental changes
Natural disasters
Earth system sciences



IROAST Research Units

IROAST promotes the establishment of international joint research networks by forming research units composed of researchers from Kumamoto University as well as from top-class universities and research institutions overseas to conduct cutting-edge, academic joint research.

Currently, twenty-five research units, composed of IROAST tenure-track faculty members, distinguished professors, visiting professors, visiting associate professors, and their host professors, are engaging in research projects and publishing their findings through overseas academic journals and international conferences.

Units of World-leading Researchers (14)

Development of Nano and Supramolecular Materials

Unit coordinator: Dr. Shinya HAYAMI

RNA Biology

Unit coordinator: Dr. Tokio TANI

Plant Cell and Developmental Biology

Unit coordinator: Dr. Shinichiro SAWA

Nano-Organics and Nano-Hybrids

Unit coordinator: Dr. Makoto TAKAFUJI

Nano-medicine and Drug Delivery System

Unit coordinator: Dr. Hamid HOSANO

Nano-medicine and Theranostics

Unit coordinator: Dr. Takuro NIIDOME

Multiscale Modeling of Soil and Rock Materials

Using X-ray CT

Unit coordinator: Dr. Jun OTANI

Medical Application of X-ray CT

- Quantification of Three Dimensional Vascular Network
- MicroCT-based Quantification of Fibrosis and Vascularization in Pancreatic Tumor

Unit coordinator: Dr. Toshifumi MUKUNOKI

Advanced Structural Materials

Unit coordinator: Dr. Yoji MINE

Microstructure Analysis and Grain Boundary Engineering

Unit coordinator: Dr. Sadahiro TSUREKAWA

Structure and Dynamics of Materials Using Quantum Beams and Data-Driven Sciences

Unit coordinator: Dr. Ichiro AKAI

Hydrological Environments

Unit coordinator: Dr. Takahiro HOSONO

Nano-materials for Energy Applications and Environmental Protection

Unit coordinator: Dr. Tetsuya KIDA

Units of Young Researchers (12)

Quantitative Bioimaging

Unit coordinator: Dr. Takumi HIGAKI

Development of Novel Therapeutic Strategy using Iron Targeted Upconversion Nanoparticles for Parkinson's Disease

Unit coordinator: Dr. Ruda LEE

Deep Learning for Hydrology

Unit coordinator: Dr. Kei ISHIDA

Environmental Impacts of Ionic Solutes

Unit coordinator: Dr. Shin-ichi OHIRA

Radio Astronomy

Unit coordinator: Dr. Keitaro TAKAHASHI

Plant Stem Cells and Regeneration

Unit coordinator: Dr. Mitsuhiro AIDA

Advanced Biomedical Evaluation System

Unit coordinator: Dr. Makiko KOBAYASHI

Bio-inspired Functional Molecular System

Unit coordinator: Dr. Yutaka KUWAHARA

Nanomaterials Processing for Medical, Cosmetic, and Environmental Applications

Unit coordinator: Dr. Mitsuru SASAKI

Development of Microbially-aided Carbon Sequestration Technology

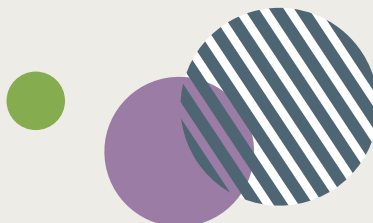
Unit coordinator: Dr. Atsushi SAINOKI

Ferroelectric Photovoltaics

Unit coordinator: Dr. Hiroki MATSUO

Next-generation Design of Structures

Unit coordinator: Dr. Gaochuang CAI



Unit 01



Associate Professor
Kei ISHIDA

Members:
Dr. Motoki AMAGASAKI, Japan
Dr. Masato KIYAMA, Japan
Dr. Ali ERCAN, USA
Dr. Tongbi TU, China



Research Keywords

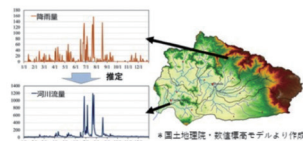
Deep learning
Hydrology
Meteorology



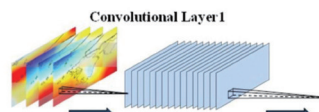
Deep Learning for Hydrology

We are working on interdisciplinary collaborative studies involving researchers in hydrology and information science. By sharing skills and knowledge, we are applying the latest deep-learning architectures to various issues in hydrology and meteorology, for which we are also working to develop new deep-learning architectures. Our research will serve to assist in resilient flood management and sustainable water resource management.

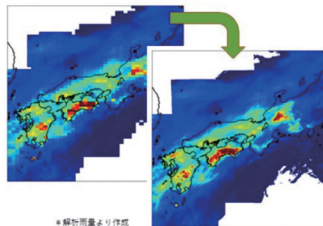
Rainfall-Runoff Analysis using LSTM



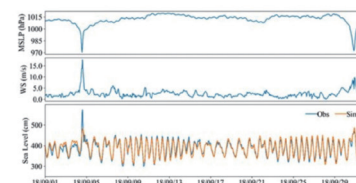
Rainfall Estimation from Standby Data by CNN



Improving the Accuracy of Precipitation Data by CNN



Sea Level Estimation by LSTM



Unit 02



Associate Professor
Makiko KOBAYASHI

Members:
Dr. Toshitaka YAMAKAWA, Japan
Dr. Masayuki TANABE, Japan
Dr. Rajendra Udyavara ACHARYA, Singapore
Dr. Shu Lih OH, Singapore
Dr. RU San TAN, Singapore



Research Keywords

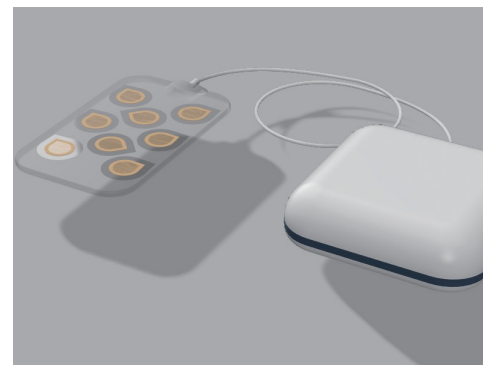
Flexible ultrasonic sensor
Flexible electronic circuit
Medicine



Advanced Biomedical Evaluation System

Heart disease is one of the main causes of death worldwide. Undiagnosed and untreated heart disease will progress and cause irreversible myocardial damage.

Our unit's team activities are aimed at achieving the early diagnosis of heart disease by processing information obtained by flexible ultrasonic sensors and flexible electronic circuit systems with an automatic diagnostic system using deep-learning algorithms.



All about IROAST

IROAST fosters young researchers who have the potential to perform internationally and to contribute to joint research and exchange with researchers in different fields or departments in Kumamoto University and overseas universities.

(as of November 1, 2021)

Members

Tenure-track Professors/ Associate Professors	4
Distinguished Professors	5
Young Faculty Members for International Joint Research	4
Postdoctoral Researchers	2
Visiting Professor/ Associate Professor	50

Achievements

Number of Tenured Faculty



Number of Researchers
Visiting from Overseas



Number of Researchers
Sent Abroad



Number of International
Internship Students



Number of International Symposia/Seminars

87 in total

Number of People
who have Joined International
Symposia/Seminars

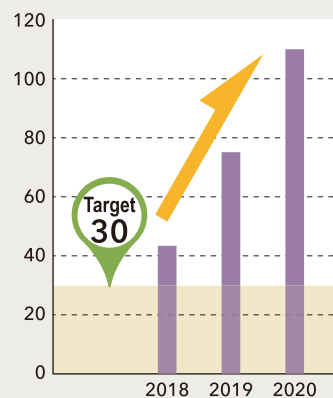


Research Achievements

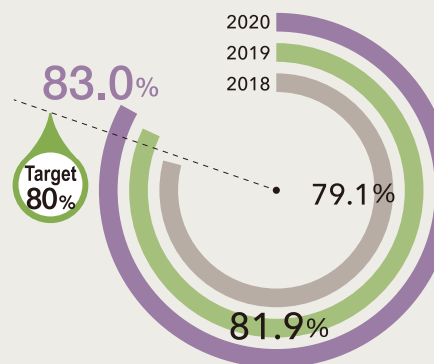
IROAST has exceeded the targets it set when it was first established. Its performance indicators are the highest in this university, and IROAST has achieved results that can strengthen and advance the university's international research competitiveness.



Number of Papers



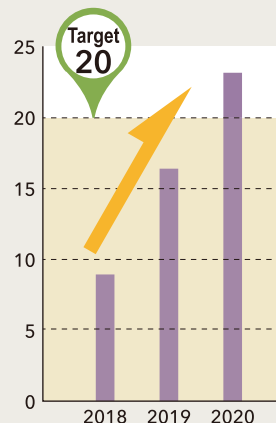
Percentage of International
Co-authored Papers



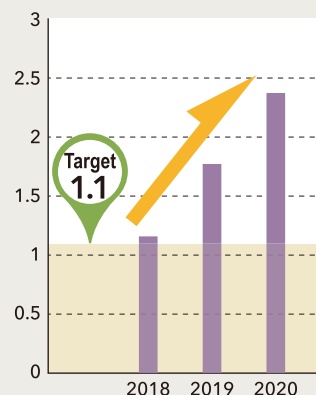
Tenured Faculty

Duration of Appointment to IROAST	Research Area
Name & Previous Job Title	Current Affiliation & Incumbent Name
Jan. 2017 – Mar. 2021 Dr. Atsushi SAINOKI Associate Professor	Green Energy Faculty of Advanced Science and Technology, Kumamoto University, Associate Professor
Jun. 2016 – May 2021 Dr. Takashi ISHIDA Assistant Professor	Advanced Green Bio Faculty of Advanced Science and Technology, Kumamoto University, Associate Professor
Aug. 2017 – Sep. 2021 Dr. Takumi HIGAKI Associate Professor	Advanced Green Bio Faculty of Advanced Science and Technology, Kumamoto University, Associate Professor

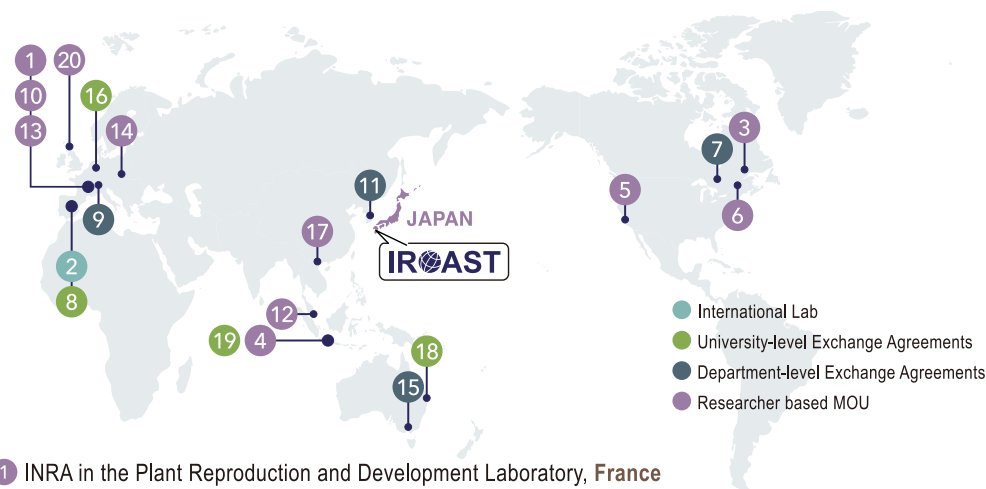
Rate of Top 10% Papers



Category Normalized Citation Impact (CNCI)



Collaborating Universities, Research Institutes, etc.



- 1 INRA in the Plant Reproduction and Development Laboratory, **France**
- 2 Universitat de València, **Spain**
- 3 Mine Multiphysics Laboratory, McGill University, **Canada**
- 4 Research Center for Earth, Disaster and Climate Change, Institut Teknologi Sepuluh Nopember (ITS), **Indonesia**
- 5 Liu Laboratory, Dept. of Plant Biology, University of California, Davis, **USA**
- 6 G3 Center, The Pennsylvania State University, **USA**
- 7 Michigan State University, **USA**
- 8 Valladolid University, **Spain**
- 9 University of Lausanne, **Switzerland**
- 10 Laboratoire 3SR, Université Grenoble Alpes, **France**
- 11 College of Health Science and Institute of Biomedical Engineering, Yonsei University at Wonju, Republic of **Korea**
- 12 Dr. Acharya's Research Group, Ngee Ann Polytechnic, **Singapore**
- 13 Groupe MSMG Géotechnique of Institut Pascal, Université Clermont Auvergne, **France**
- 14 Główny Instytut Górnictwa, **Poland**
- 15 The Commonwealth Scientific and Industrial Research Organisation (CSIRO), **Australia**
- 16 RWTH Aachen University, **Germany**
- 17 Doan Dinh Hung lab, Vietnam National Museum of Nature, Vietnam Academy of Science and Technology, **Viet Nam**
- 18 Queensland University of Technology, **Australia**
- 19 Institut Teknologi Bandung (ITB), **Indonesia**
- 20 Tsavdaridis Laboratory, Dept. of Civil Engineering, City, University of London, **UK**

International Symposia & Seminars

IROAST provides international symposia to share research results both domestically and internationally. Researchers discuss issues across different fields, leading to the launch of new interdisciplinary research and international collaboration. Though international exchange has been made difficult by COVID-19 pandemic restrictions, the symposia have continued online.

IROAST & IRCMS Joint Seminar 2020

—67th IRCMS Seminar/ 75th IROAST Seminar held on August 25th, 2020

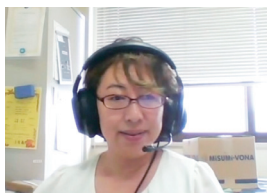
IROAST and the International Research Center for Medical Sciences (IRCMS) have been conducting cooperative activities to promote joint research within the university by making use of their combined strengths. At this symposium co-hosted by the organizations, researchers engaged in advanced research in different fields shared their knowledge in lively discussions.



Dr. Toshio SUDA (IRCMS)



Dr. Takashi HIYAMA (IROAST)



Dr. Makiko KOBAYASHI (FAST)



Dr. Tokio TANI (FAST)

The 7th IROAST-IRCMS Joint Seminar
- The 75th IROAST Seminar/The 67th IRCMS Seminar -
“Creation of joint researches which develops interdisciplinary research fields”
August 25, 2020 (Tue.) 14:00-15:55

※ Zoom online seminar
Please pre-register to receive the Zoom meeting information.
http://ircms.kumamoto-u.ac.jp/symposium_reserve/symposium/reservation/

Progress Reports by IRCMS-IROAST Research Collaboration Groups

- Quantitative bioimage analysis to elucidate dynamics of hematopoietic stem cells (HSCs) in living animals
*Takumi Higaki, IROAST / Yuji Takahara, Univ. Hospital / Hidenobu Mizuno, IRCMS
- In silico analyses to dissect roles of blood flow-derived mechanical stimuli in biological phenomena: vascular development and cancer metastasis
*Koichi Nishiyama, IRCMS / Toshifumi Mukunoki, FAST-IROAST
- Development of the novel drugs for Adult T-cell Leukemia based on the modifications of nuclear morphology
*Tokio Tani, FAST / Yoriomi Sato, Joint Research Center for Human Retrovirus Infection - IRCMS / Takashi Itoe, FAST / Ramesh Pillai, IROAST
- Micro CT-based quantification of angiogenesis in tumor microenvironment
*Takashi Itoe, IRCMS / Toshifumi Mukunoki, FAST-IROAST / Jun Otani, FAST-IROAST / Buluke, IRCMS
- Targeted inhibition of epithelial to mesenchymal transition (EMT) in MT1-MMP-expressing cancer cells in vivo
*Sheng Guojun, IRCMS / Ruda Lee, IROAST

Short Research Self-marketing
*Introduce own research to find new joint research counterparts

Inquiry: International Research Center for Medical Sciences (IRCMS)
TEL 096-373-4847 / ircms@ircms.kumamoto-u.ac.jp
International Research Organization for Advanced Science and Technology (IROAST)
TEL 096-342-3303, 3362 / iroast@iroast.kumamoto-u.ac.jp

* IRCMS: International Research Center for Medical Sciences
FAST: Faculty of Advanced Science and Technology

Research Unit Progress Report Seminar

-The 76th IROAST seminar-

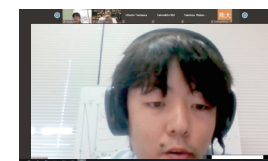
An online seminar was held to report on the progress of research by each research unit. Nine young researchers from the research units gave talks, and Assistant Professor Inada Shunko Albarno, who recently joined the Faculty of Advanced Science and Technology, introduced her research.



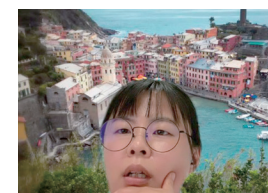
Dr. Kazuki TAKASHIMA (IROAST)



Dr. Mitsuhiro AIDA (IROAST)



Dr. Atsushi SAINOKI (IROAST)



Dr. Ruda LEE (IROAST)

The 1st IROAST Research Unit Progress Report Seminar
-The 76th IROAST seminar-

Mon, September 28, 2020 13:30~16:30

STYLE Online seminar by Zoom The seminar is held in English

PROGRAM

Opening address
13:30-13:35 Kazuki TAKASHIMA, IROAST Vice Director

Presentation
13:35-13:45 Unit name (Unit coordinator, affiliation)
13:45-13:55 Radio Astronomy (Keitaro TAKAHASHI, FAST)
13:55-14:05 Deep Learning for Hydrology (Kei ISHIDA, FAST)
14:05-14:15 Q&A
14:15-14:25 Environmental Impacts of Ionic Solutes (Shin-ichi OHIRA, FAST)
14:25-14:35 Development of microbially-aided carbon sequestration technology (Atsushi SAINOKI, IROAST)
14:35-14:45 Advanced Biomedical Evaluation System (Makiko KOBAYASHI, FAST)
14:45-14:55 Q&A
15:00-15:10 Break
15:10-15:20 Bio-inspired Functional Molecular System (Yutaka KUWAHARA, FAST)
15:20-15:30 Development of novel therapeutic strategy using iron targeted upconversion nanoparticles for Parkinson's disease (Ruda LEE, IROAST)
15:30-15:40 Nanomaterials processing for medical, cosmetic, and environmental applications (Mitsuru SASAKI, IIRNA)
15:40-15:50 Quantitative Bioimaging (Takumi HIGAKI, IROAST)
15:50-16:00 Plant Stem Cells and Regeneration (Mitsuhiro AIDA, IROAST)
16:00-16:05 Q&A

Free Discussion
16:00-16:25 Discussion session for exchange of ideas between participants and young researchers aiming for creating a new international research collaboration, etc.

Closing address
16:25-16:30 Takashi HIYAMA, IROAST Director

Inquiry
International Research Organization for Advanced Science and Technology (IROAST)
Sato (ext. 3362)
E-mail: iroast@iroast.kumamoto-u.ac.jp

Research Internship Program

We offer research internships to graduate students and young researchers enrolled in foreign universities and research institutes for short-term assignments, mainly to provide them with research guidance.

77th IROAST Seminar

Visiting Prof. Gioacchino (Cino) Viggiani's lab at the University of Grenoble (UGA), France, and Prof. Toshifumi Mukunoki's lab at the Faculty of Advanced Science and Technology jointly held an online seminar on research using Micro-CT on May 12, 2021. Forty-three participants from both universities took part in the seminar and engaged in fruitful discussion.



MAY 12 (WED) 16:00-19:00
ONLINE SEMINAR BY ZOOM

77TH IROAST SEMINAR

~Discussion seminar for Study on particle and fluid behaviors in granular materials using micro tomography~

Speakers : Young Researchers from
IROAST Visiting Professor, Dr. Gioacchino(Cino) Viggiani's Lab
Solid Mechanics and Civil Engineering, Université de Grenoble Alpes, France
Dr. Mukunoki Toshifumi's Lab & X-Earth center,
Department of Civil and Environmental Engineering and Architecture

Participants:

Mr. Takashima (KU) Director of IROAST	Prof. Viggiani (UGA) Visiting professor IROAST	Prof. Mukunoki (KU) Organizer	Prof. Otani (KU) Trustee and Vice President Kumamoto University
Mr. Nohara (KU)	Dr. Couture (UGA)	Dr. Sato (KU)	Mr. Pinzón (UGA)

Image analysis (1)

Porosity: Porosity is calculated for each grid (2x2x2mm) from the voxels correspond to particles on segmented images.

Contact surface: The ratio of contact surface between particles is calculated for each grid (2x2x2mm) from two difference images.

Scene 1 of seminar **Scene 2 of seminar**

Ms. Mona PAKDEL (Alzahra University, Iran)

Internship period: Oct. 8, 2019 – Nov. 13, 2019

Host faculty: Prof. Hamid HOSANO (Institute of Industrial Nanomaterials)



Meeting with Dr. Hiyama, former Director of the IROAST, Prof. Hamid HOSANO and Ms. Mona PAKDEL



Experiments to produce nanoparticles

Mr. Venkata Nanda Kishor Babu ADUSUMALLI (Chonnam National University, Korea)

Mr. Min Soo KANG (Kangwon National University, Korea)

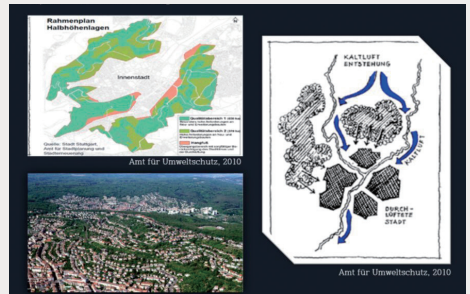
Ms. Woojin LEE (Kongju National University, Korea)

Internship period: Sep. 1, 2021 – Oct. 27, 2021

Host faculty: Associate Prof. Ruda LEE (IROAST)



Online discussion of research methods and results





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https://www.instagram.com/iroast_kumamotouniversity/



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