IROAST
International Research Organization
for Advanced Science & Technology

Kumamoto University

Contents

Message

Kumamoto University, one of Japan's leading research universities, promotes world-leading research. The International Research Organization for Advanced Science and Technology (IROAST) was established in April 2016 with the aim of strengthening the University's international research capabilities in the fields of science and engineering.

IROAST has two major missions: one is to foster talented and internationally active young researchers who will be leading the future of the University; the other is to promote international collaborative research with overseas top-class universities and research institutions. For the development of young researchers, we operate a tenure-track system and send them to overseas universities and research institutions for long periods of time in order to build an international network. As for international joint research, we invite leading researchers from overseas universities and research institutes as distinguished professors to promote collaborative research and to provide research guidance for graduate students. These efforts have produced excellent results.

The first phase of IROAST was completed in March 2022, and the second phase began in April of the same year. In the second phase, we aim to become an international co-creation research center that produces world-class innovations for realizing a well-being focused society, based on experience obtained in the first phase. To this end, we would like to further promote interdisciplinary fusion research that transcends departmental boundaries, not only within the framework of science and engineering, but also by collaborating with medical and pharmaceutical sciences and social and cultural sciences.

This brochure summarizes previous activities of IROAST. If you are interested in our activities and collaborative research, please contact us. We look forward to new partnerships.

Kazuki TAKASHIMA, Director, IROAST

Overview

We had 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 were 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 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.

Phase 1

2016 — 2021

Nano Material Science
Pulse power science and advanced metal materials. Graphene oxide non-sheets, hydrogen production catalysts, and innovative materials under extreme conditions, etc.

Green Energy
Development and utilization of renewable energy resources, biomass application, etc.

Environmental Science
Environmental assessment, analysis of climate change, protection of underground water and shallow sea areas, etc.

Advanced Green Bio
Interdisciplinary research areas. e.g. drug delivery systems, environment-friendly pesticides, medical diagnosis with X-ray CT and IT, etc.

IROAST

Phase 2

2022 —

Human-friendly Technologies
Biotechnology & Healthcare Technology
Environment-friendly Technology
Environmental Bioscience

Strengthening Resilience
Safe and Secure Society
Disaster Prevention and Mitigation

Science and Technology for Building a Well-being Society

Advanced Materials

Data Science, AI

International Advidsory Board (IAB): Our IAB is composed of highly-insightful, broadly-experienced experts who are well-versed in academic and research affairs both domestically and internationally. The board conducts hearings on the management and administration of IROAST and provides advice to aid the organization in becoming an internationally recognized research institution.

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 January 1, 2024)

Director

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

Vice Director

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

Distinguished Professors

Dr. U Rajendra ACHARYA
Professor,
University of Southern Queensland, Australia

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

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

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

Tenure-track Associate Professors

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

Dr. Masahiko FURUTANI
International Research Organization for Advanced Science and Technology

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

Dr. Zhongyue ZHANG
International Research Organization for Advanced Science and Technology

Postdoctoral Researchers

Dr. Jonas Karl N. AGUTAYA
International Research Organization for Advanced Science and Technology

Dr. Nobleson KUNJAPPY
International Research Organization for Advanced Science and Technology

Dr. Prafulla Bahadur MALLA
International Research Organization for Advanced Science and Technology

Dr. Mohammad Atiqur RAHMAN
International Research Organization for Advanced Science and Technology

Dr. Reetu Rani
International Research Organization for Advanced Science and Technology

International Joint Research Faculty Members

Dr. Takumi HIGAKI
Professor,
Faculty of Advanced Science and Technology

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

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

Dr. Makiko KOBAYASHI
Professor,
Faculty of Advanced Science and Technology

Dr. Ruda LEE
Associate Professor,
Institute of Industrial Nanomaterials (IINa)

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

Dr. Shin-Ichi OHIRA
Professor,
Faculty of Advanced Science and Technology

Dr. Atsushi SAINOKI
Associate Professor,
Faculty of Advanced Science and Technology

Dr. Mitsuru SASAKI
Associate Professor,
Institute of Industrial Nanomaterials (IINa)

Dr. Keitaro TAKAHASHI
Professor,
Faculty of Advanced Science and Technology

Visiting Professors / Visiting Associate Professors (as of January 1, 2024)

Visiting Professors

① Dr. Raffi AROIAN
Professor
University of Massachusetts Medical School, USA

② Dr. Suttichai ASSABUMRUNGRAT
Professor
Center of Excellence in Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Thailand

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

④ Dr.Nicolae BARSAN
Senior Researcher / Group Head
The Institute of Physical and Theoretical Chemistry, University of Tubingen, Germany

⑤ Dr. Jorge Norberto BELTRAMINI
Professor
Queensland University of Technology (QUT), Australia

⑥ Dr. Olivier BOUTIN
Professor
Deputy Director M2P2, Director Master Chemical Engineering,
M2P2 Laboratory, Aix Marseille University, France

⑦ Dr. Paul BOWEN
Professor
School of Metallurgy and Materials,
University of Birmingham, UK

⑧ Dr. Pierre BREUL
Professor
Polytech Clermont-Ferrand/ Institute Pascal/
University of Clermont Auvergne, France

⑨ Dr. Maria Jose COCERO
Professor
Chemical Engineering & Environmental Technology,
The University of Valladolid, Spain

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. Bruno FAVERY
INRAE senior scientist (DR2)
UMR 1355-7254, INRAE-Université Côte d'Azur-CNRS,
Institut Sophia Agrobiotech (ISA), France

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

⑲ Dr. Ick Chan KWON
Principal Research Scientist
Biomedical Research Institute, Korea Institute of Science and Technology (KIST), Korea

⑳ Dr. Wen-Shing LEE
Professor,
National Taipei University of Technology, Taiwan

㉑ Dr. Youn-Woo LEE
Professor
School of Chemical and Biological Engineering,
Seoul National University, Korea

㉒ Dr. Pavel LEJČEK
Professor
Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic
University of Chemistry and Technology, Prague, Czech Republic

㉓ Dr. Bo LIU
Professor
Department of Plant B iology,
2167 Life Sciences,
University of Calofprnia Davis, USA

㉔ Dr. Tao LIU
Professor,
State Key Laboratory of Fine Chemicals, Dalian University of Technology, China

㉕ Dr. Reiko ODA
Research Director
CBMN (UMR5248), CNRS-University of Bordeaux, France

㉖ Dr. Shie-Ming PENG
Distinguished Research Professor
National Taiwan University, Taiwan

㉗ Dr. Christian RENTENBERGER
Associate Professor
Faculty of Physics,
University of Vienna, Austria

㉘ Dr. Parasuraman SELVAM
Professor
Department of Chemistry, Indian Institute of Technology-Madras, India

㉙ Dr. Amir SI LARBI
Professor
ENISE, University of Lyon, France

㉚ Dr. Konstantinos Daniel TSAVDARIDIS
Full professor
School of Mathematics, Computer Science and Engineering,
City, University of London, UK

㉛ Dr. Gioacchino (Cino) VIGGIANI
Professor
Solid Mechanics and Civil Engineering,
Université Grenoble Alpes, France

㉜ Dr. Thomas WAITZ
Associate University Professor
Faculty of Physics, University of Vienna, Austria

㉝ Dr. Zhenghe XU
Professor/Dean
College of Engineering,
Southern University of Science and Technology, China

Visiting Associate Professors

㉞ Dr. Tomoyasu MANI
Assistant Professor
Department of Chemistry, University of Connecticut, USA

㉟ Dr. Agus Pulung SASMITO
Associate Professor
McGill University, Canada

㊱ Dr. Tung Thanh TRAN
Lecturer/Senior Researcher
The University of Adelaide, Australia

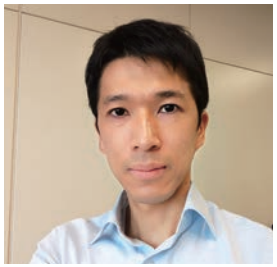
㊲ Dr. Dario ZAPPA
Associate Professor
The University of Brescia, Italy

㊳ Dr. Daniel P. ZITTERBART
Assistant Scientist
Woods Hole Oceanographic Institution, USA

Research Topics

case 01

Development of Ferroelectric Materials for Energy Storage and Conversion

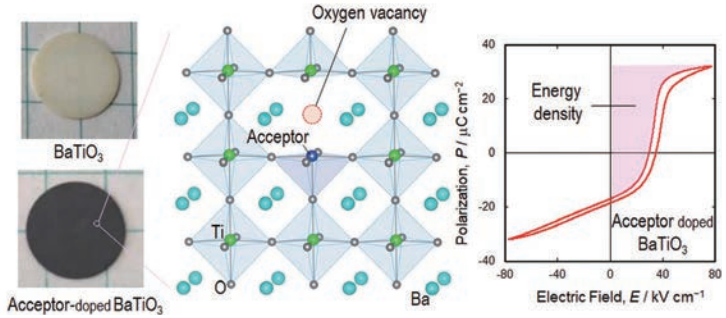


Associate Professor
Hiroki MATSUO

High energy density capacitors are indispensable for compact and high-performance electronic devices such as computers and mobile phones. In our research group, we are developing ferroelectric materials that determine the performance of capacitors. Our basic approach to enhancing the functionalities of ferroelectric materials is doping impurity elements and introducing vacancies into the crystal lattice. We are also focusing on the characteristic photovoltaic effects of ferroelectric materials that can convert light energy into electrical energy and trying to develop novel materials for future photovoltaic devices.

Research Keywords

Ferroelectric Materials
Energy Storage
Photovoltaics



case 02

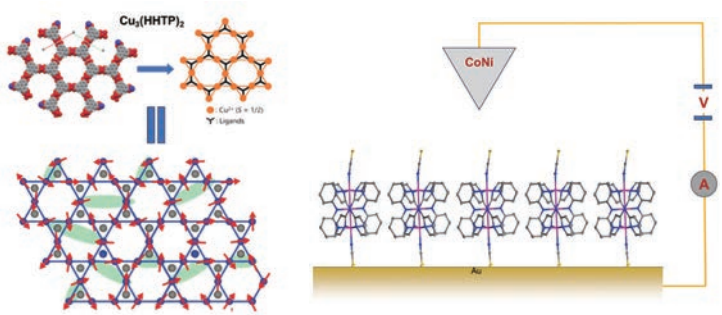
Electronic, magnetic and quantum physical properties of low-dimensional molecular systems.

Associate Professor
Zhongyue ZHANG

The discovery of graphene and many other low-dimensional materials enriched the modern electronics and lead to the unveiling of numerous exotic quantum physical phenomena. Our research focuses on the development of molecular counterparts of these intriguing low-dimensional materials, examining their electronic and magnetic properties, studying the interplay between basic factors such as spin and chirality, and look for novel candidate materials for modern quantum informatic techniques.

Research Keywords

Low-dimensional
Molecular Materials
Magnetism
Spintronics
Quantum physical properties



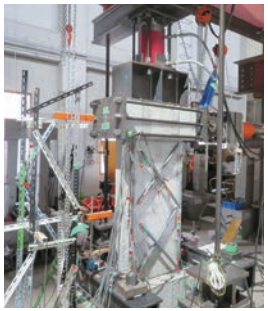
Sustainable Development Goals (SDGs) are a set of 17 international goals and 169 targets for the period from 2016 to 2030 established with the aim of addressing globally-shared social challenges and realizing a sustainable world. IROAST researchers engage in interdisciplinary research that transcends 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

Postdoctoral Researcher
Dr. Prafulla Bahadur MALLA
Host: Dr. Gaochuang CAI

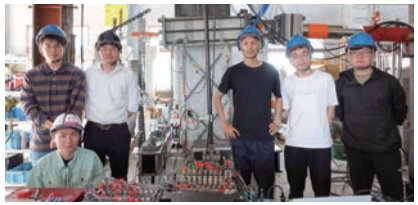
Research Keywords

Low bond-ultra high strength bars
Residual deformation control
Long-period ground motion
Structure resilience



Performance and Evaluation of Resilient Reinforced Concrete Shear Walls with Ultra-High Strength Bars Under Strong Earthquakes

Shear walls are crucial in resisting the shear force in conjunction with structural components. Damages sustained by ordinary ductile reinforced concrete (RC) shear walls for maximum considered earthquakes exceed the repairable levels. This research studies experimentally the seismic performance of RC shear walls with ordinary deformed bars and low bond ultra-high strength bars (LBUHS bars) under normal cyclic loading. The experiment on the shear wall reinforced with LBUHS bars confirms their superior seismic behavior and self-centering performance. It has been revealed that by applying the ultra-high strength bars to the shear walls, stable drift hardening behavior was achieved up to the drift angle of 4.5% while suppressing residual deformation of the walls.



case 04

Postdoctoral Researcher
Reetu Rani
Host: Dr. Shin-Ichi OHIRA

Research Keywords

Metal Organic Frameworks
Ionic solutes
Trace analysis
Rare metal recovery

Selective ionic solutes adsorption/desorption of metal-organic framework for trace analysis and rare metal recovery

At even trace levels, certain ionic solutes pose significant challenges to human health, the environment, and various industrial applications, including semiconductors. The quantification of ultra-trace ions is frequently carried out using inductively coupled plasma-mass spectrometry (ICP-MS). However, the matrices in which these ions are found can impact the analysis by altering ionization efficiency and inducing space charge effects. This demands the development of materials that exhibit exceptional extraction and adsorption capabilities for specific metal ions. Metal organic Frameworks (MOFs), known for their porous structures and adaptability, offer high surface area, tunable pore size, and stability. These features position MOFs as promising candidates for tailored extraction strategies from complex matrices like seawater, commercial chemicals, and wastewater. Therefore, Zirconium based MOFs are tested for adsorption of alkali and alkaline earth metal ions from aqueous samples and in future MOF modified membranes will be tested for selective transfer/extraction of metal ions from aqueous samples for trace analysis and rare metals recovery.

IROAST Research Clusters

Young Researchers (14)

1 Ferroelectric Photovoltaics
Cluster coordinator
Dr. Hiroki MATSUO
Korea Japan

2 Next-Generation Design of Building Structures-DfX
Cluster coordinator
Dr. Gaochuang CAI
France UK Germany Japan

3 Control of Plant-Parasitic Nematodes
Cluster coordinator
Masahiko FURUTANI
USA Japan

4 Low-Dimensional Molecular Electronics and Spintronics
Cluster coordinator
Zhongyue ZHANG
China USA Japan

5 Reprogramming Multi-Drug Resistance Breast Cancer for Women's health and quality of life
Cluster coordinator
Dr. Ruda LEE
Korea USA Japan

6 Development of Microbially-Aided Carbon Sequestration Technology
Cluster coordinator
Dr. Atsushi SAINOKI
Australia Japan

7 Digital Plant Cell Biology
Cluster coordinator
Dr. Takumi HIGAKI
USA Japan

8 Deep Learning for Hydrology
Cluster coordinator
Dr. Kei ISHIDA
Turkey China Japan

9 Study of First-Generation Objects in the Universe with Radio Telescopes
Cluster coordinator
Dr. Keitaro TAKAHASHI
Australia Japan

10 Separation, Synthesis, and Detection by Means of Lonic Solutes Handling
Cluster coordinator
Dr. Shin-Ichi OHIRA
China USA Japan

11 Advanced Biomedical Evaluation System
Cluster coordinator
Dr. Makiko KOBAYASHI
Singapore Japan

12 Environmentally Promising Processes for Medical and Skincare Nanomaterials
Cluster coordinator
Dr. Mitsuru SASAKI
France Canada UK Mexico Japan

13 Environmental Diagnosis on Earth Surface Systems
Cluster coordinator
Dr. Takahiro HOSONO
Germany Italy Japan

14 Novel Cancer Medical Technology Using Liquid Biopsy
Cluster coordinator
Dr. Yuta NAKASHIMA
Singapore Japan

World-leading Researchers (11)

15 Development of Nano and Supramolecular Materials
Cluster coordinator
Dr. Shinya HAYAMI
Australia Korea UK Italy Japan

16 Plant Cell and Developmental Biology
Cluster coordinator
Dr. Shinichiro SAWA
Spain France Japan

17 Nano-Organics and Nano-Hybrids
Cluster coordinator
Dr. Makoto TAKAFUJI
France Spain China USA Japan

18 Nano-medicine and Drug Delivery System
Cluster coordinator
Dr. Hamid HOSANO
UK Australia India USA Netherlands Japan

19 Nano-medicine and Theranostics
Cluster coordinator
Dr. Takuro NIIDOME
Korea Japan

20 Quantification of Three Dimensional Vascular Network
Cluster coordinator
Dr. Toshifumi MUKUNOKI
New Zealand Japan

21 Advanced Structural Materials
Cluster coordinator
Dr. Yoji MINE
China UK Germany Australia Japan

22 Microstructure Analysis and Grain Boundary Engineering
Cluster coordinator
Dr. Sadahiro TSUREKAWA
Germany Czech Republic Austria Japan

23 Structure and Dynamics of Materials Using Quantum Beams and Data-Driven Sciences
Cluster coordinator
Dr. Ichiro AKAI
France UK Hungary Latvia Japan

24 Nano-materials for Energy Applications and Environmental Protection
Cluster coordinator
Dr. Tetsuya KIDA
Spain Japan

25 Plant Stem Cells and Regeneration
Cluster coordinator
Dr. Mitsuhiro AIDA
Czech Republic Mexico Japan

Cluster 01

Associate Professor
Atsushi SAINOKI, Japan

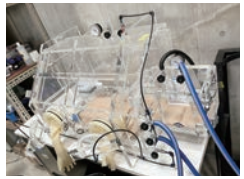
Members:
Dr. Akira SATO, Japan
Dr. Murat KARAKUS, Australia
Dr. Kazunori NAKASHIMA, Japan
Dr. Hiroaki ITO, Japan

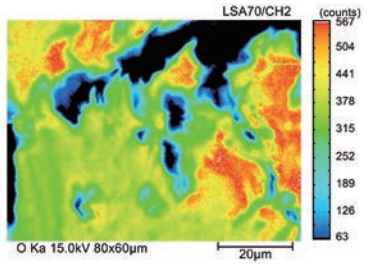
Research Keywords

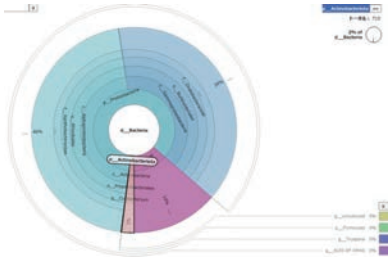
Carbon neutral
CO2 mineralization
Carbon capture and storage (CCS)

Development of Microbially-Aided Carbon Sequestration Technology

Carbon capture and storage (CCS) is believed to make significant contribution for reducing CO2 emission to the atmosphere over the next few decades, but there is a serious risk for the leak-off of the injected CO2 to the ground surface through pre-existing fractures. To mitigate the risk, our team aims at developing a methodology to enhance the efficiency of CO2 mineralization with the help of anaerobic microbes. In this way, the injected CO2 is stabilized as carbonate rock, thereby reducing the risk. In addition, the method can be used to improve the integrity of rock mass in deep underground under anaerobic conditions. This provides versatile applications for deep underground development and utilization.







Cluster 02

Associate Professor
Ruda LEE, Japan

Members:
Dr. Seung-Hae KWON, Korea
Dr. Jungkyu KIM, USA

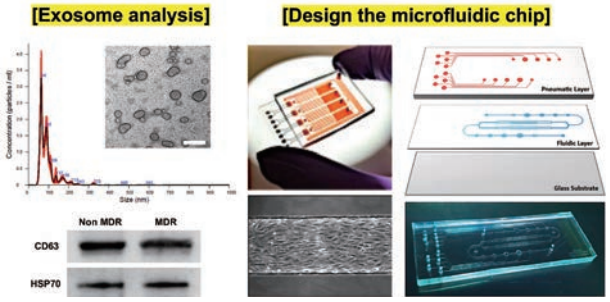
Research Keywords

Multi-drug resistance in cancer
Extracellular vesicles (EVs)
Cancer cell reprogramming

Development of Microchip for Exosome Cross-Talk Analysis Between Drug-Sensitive Cells and Drug-Resistant Cells

Chemotherapy has been used for primary conventional treatment for cancer, but multidrug resistance (MDR) poses a significant challenge in chemotherapy. Several complex regulatory signaling mechanisms dynamically cross-talk to initiate, establish, and maintain tolerance/resistance to different chemotherapeutic agents in breast cancer.

In this research, we mainly worked for exosome tracking under a microfluidic channel and will evaluate the exosome-mediated reprogramming of the MDR to drug-sensitive conditions. The research clusters were designed for gravity-related microfluidic chips and formed a cancer environment. The cellular interaction between the drug-sensitive and MDR cells was tracked by super-resolution microscopy and indicated the movement of extracellular vesicles (EVs).



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 January 1, 2024)

Members

Tenure-track Professors/ Associate Professors	4
Distinguished Professors	4
International Joint Research Faculty Members	10
Postdoctoral Researchers	5
Visiting Professor/ Associate Professor	38

Achievements

Number of International Internship Students

34 in total

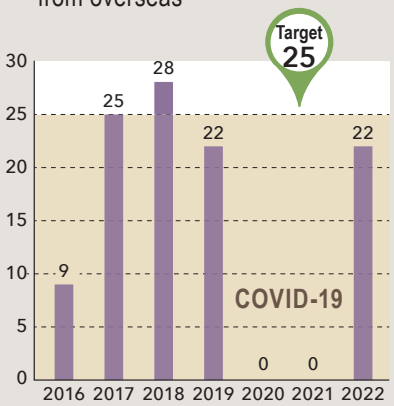
Number of International Symposia/Seminars

142 in total

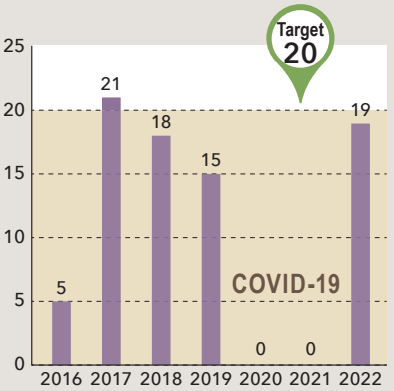
Number of People who have joined International Symposia/Seminars

5051

Number of researchers visiting from overseas



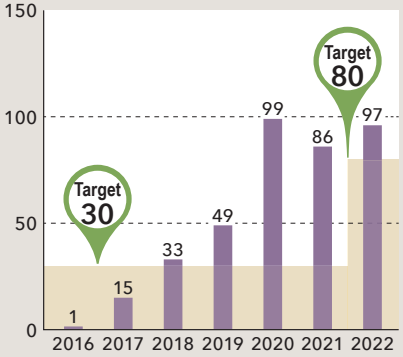
Number of researchers sending abroad



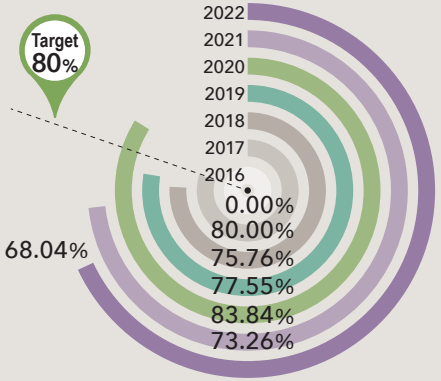
Research Achievements

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



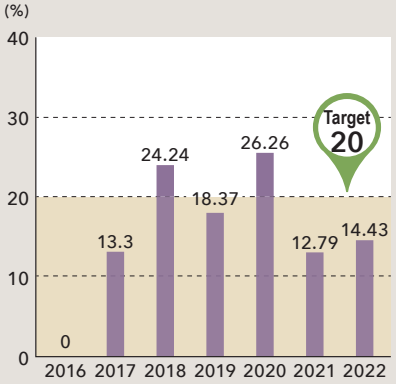
Percentage of International Co-authored Papers



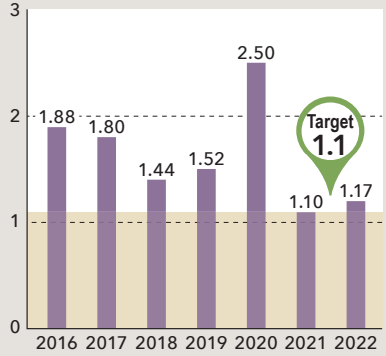
Tenured Faculty

Duration of Appointment to IROAST Name & Previous Job Title	Research Area 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, Professor
Jan. 2017 – Dec. 2021 Dr. Ruda LEE Associate Professor	Nano Material Science Institute of Industrial Nanomaterials, Kumamoto University, Associate Professor
Jul. 2017 – Jun. 2022 Dr. Mitsuhiro AIDA Professor	Advanced Green Bio Faculty of Advanced Science and Technology, Kumamoto University, Professor

Rate of Top 10% Papers

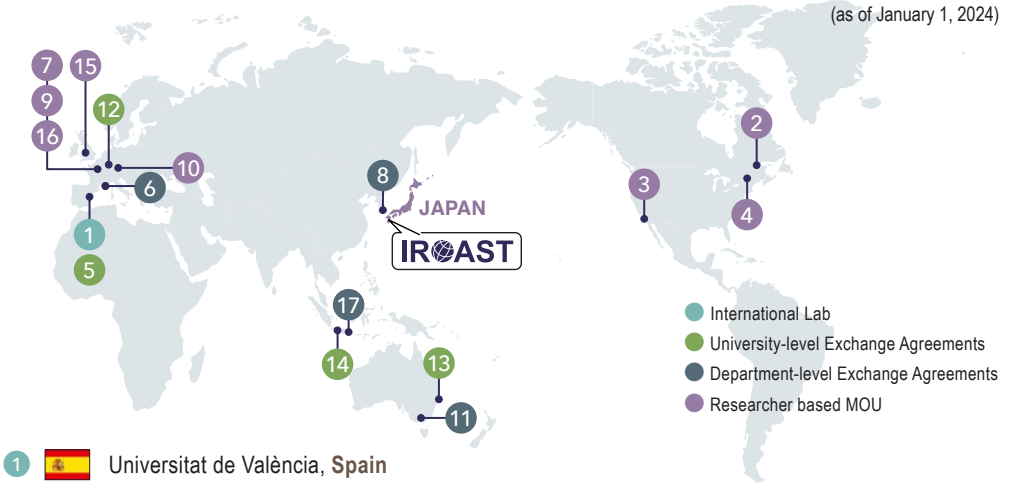


Category Normalized Citation Impact (CNCI)



Collaborating Universities, Research Institutes, etc.

(as of January 1, 2024)



1. Universitat de València, **Spain**
2. Mine Multiphysics Laboratory, McGill University, **Canada**
3. Liu Laboratory, Dept. of Plant Biology, University of California, Davis, **USA**
4. G3 Center, The Pennsylvania State University, **USA**
5. Valladolid University, **Spain**
6. School of Biology, Faculty of Biology and Medicine, University of Lausanne, **Switzerland**
7. Laboratoire 3SR, Université Grenoble Alpes,**France**
8. College of Health Science and Institute of Biomedical Engineering, Yonsei University at Wonju, **Republic of Koreat**
9. Groupe MSMG of Institut Pascal, Université Clermont Auvergne, **France**
10. Główny Instytut Górnictwa (GIG), **Poland**
11. CSIRO Manufacturing, The Commonwealth Scientific and Industrial Research Organisation (CSIRO), **Australia**
12. RWTH Aachen University, **Germany**
13. Queensland University of Technology, **Australia**
14. Institut Teknologi Bandung (ITB), **Indonesia**
15. Tsavdaridis Laboratory, Department of Civil Engineering, City, University of London, **UK**
16. Si Larbi Laboratory, LTDS, École Nationale d'Ingénieurs de Saint-Étienne (ENISE), École Centrale de Lyon (ECL), Université de Lyon, **France**
17. Engineering Faculty / Research Institute and Community Engagement, Universitas Negeri Malang (UM), **Indonesia**

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.

The 18th IROAST Symposium

On November 21, 2023, the International Research Organization for Advanced Science and Technology (IROAST) held the 18th Kumamoto University IROAST Symposium in a hybrid online and on-site format.

Four researchers then presented the results of their international collaborative research supported by IROAST and exchanged opinions with the participants. In between the research presentations, four postdoctoral researchers gave poster presentations, where they talked about their research and had a chance to get to know the participating researchers and graduate students.

Approximately 100 people from education and industry registered to the symposium special website, which provided an opportunity to widely share the IROAST research achievements and to actively exchange opinions with the participants.

President Hisao OGAWA

Introduction of IROAST & Oral Presentation

Poster Session

The 94th and 95th IROAST Seminar

On May 16 and May 18, 2023, the 94th and 95th IROAST Seminar, organized by Prof. Sadahiro TSUREKAWA (FAST), was held and KU's students and faculty member attended. Prof. Dmitri A. MOLODOV from Germany gave an interesting talk on Grain boundary migration. The participating students and others benefited from a lecture by Distinguished Professor Dmitri A. MOLODOV, one of the world's top experts in this field.

Prof. Sadahiro TSUREKAWA (FAST)

IROAST Distinguished Professor
Dmitri A. MOLODOV

The 102nd IROAST Seminar

On October 20, 2023, the 102nd IROAST Seminar was held under the organization of Prof. Kei TODA (Vice Director of IROAST/FAST) inviting Dr. Daniel P. ZITTERBART, IROAST Visiting Associate Professor / Associate Scientist, Woods Hole Oceanographic Institution, USA. Dr. ZITTERBART's research focuses on health of ecosystems through the behavior of wildlife, and in this seminar, he introduced his research on emperor penguins and whales.

FAST: Faculty of Advanced Science and Technology

Dr. Daniel P. ZITTERBART

Prof. Kei TODA
(Vice Director of IROAST・FAST)

The 104th IROAST Seminar

On October 27, 2023, the 104th IROAST Seminar, organized by Prof. Tetsuya KIDA (FAST) and Prof. Armando T. QUITAIN (Center for International Education) was held. Faculty members and students from both on-campus and overseas participated in the seminar, not only at the venue but also online.

Prof. Armando T. QUITAIN
(Center for International Education)

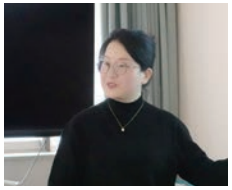
Prof. Maria Jose COCERO

The 112th IROAST Seminar

On December 15, 2023, the 112th IROAST Seminar, organized by Associate Prof. Ruda LEE (IINa), was held with Dr. Helen (Xiaoxue) XU, School of Biomedical Engineering, University of Technology Sydney, Australia. Many students and faculty members gathered at the venue and enjoyed the lectures and discussion with great interest.

IINa: Institute of Industrial Nanomaterials

Assoc. Prof. Ruda LEE (IINa)



Dr. Helen (Xiaoxue) XU

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.

Mr. ZHANG Zhe, Mr. ZHAO Yang, Mr. ZHANG Feng
(Shandong University of Science and Technology, China)

Internship period:
July 24, 2023 - October 27, 2023
(including online internship period)

Host faculty:
Assoc. Prof. Atsushi SAINOKI (FAST)

Dr. TA Thi Hoai
(VNU University of Science (VNU-HUS), Vietnam)

Internship period:
July 10, 2023 - October 20, 2023
(including online internship period)

Host faculty:
Prof. Toshifumi MUKUNOKI (FAST)

Ms. Mina Marie RUFF
(University of Bordeaux, France)

Internship period:
January 15, 2024 - March 18, 2024
(including online internship period)

Host faculty:
Prof. Makoto TAKAFUJI (FAST)

Kumamoto University

IROAST, Kumamoto University

International Research Organization
for Advanced Science & Technology

IROAST Kumamoto University

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