

IROAST Symposium & Seminars

IROAST Symposium

The 6th IROAST Symposium

-1st Pan Pacific Reverse Monte Carlo Conference-



was held on February 20 and 21, at Kurokami South Campus with the aim of discussing current issues concerning the Reverse Monte Carlo (MC) method of structural modeling. Twenty-six researchers were invited to give lectures and had a lively discussion from all over the world.

IROAST Seminars



Prof. Konstantinos Kontis



Prof. Ramesh Pillai













Prof. Olivier Boutin

IROAST Research Internship Program

IROAST Research Internship Program provides hands-on research opportunities for highly motivated undergraduate/graduate students and young postdoctoral researchers who have an interest in advanced scientific research.

We welcomed the students and researchers from;

-  Indonesian Institute of Sciences, Indonesia
-  Shandong University of Science and Technology, China
-  Technical University of Hamburg, Germany
-  Wonju Severance Christian Hospital/ College of Medicine, Yonsei University, Korea
-  Alzahra University, Iran
-  Chonnam National University, Korea
-  University of Connecticut, USA
-  Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India
-  The University of Queensland, Australia
-  The University of British Columbia, Canada



Discussion with Professor H. Ishikawa and fellow students



Dr. Mona Pakdel
(Host Professor:
Hamid Hosano)



Contact

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October 2020



Activity 2019-20



Nano Material Science

Organic functional materials, development of innovative materials



Distinguished Professor
Peking University, China
Dr. Yufeng ZHENG

Green Energy

Development and utilization of renewable resources



Distinguished Professor
Hungarian Academy of Sciences, Hungary
Dr. László PUSZTAI



Distinguished Professor
Queensland University of Technology, Australia
Dr. Jorge Norberto BELTRAMINI

IROAST TARGETTING

- Development of young excellent researchers
- Promotion of cutting-edge research
- Initiation of innovative interdisciplinary research
- Creation of strong international joint research networks



Environmental Science

Protection and evaluation of hydrospheric and atmospheric environments



Distinguished Professor
University of Glasgow, UK
Dr. Konstantinos KONTIS

Message from Director

The International Research Organization for Advanced Science and Technology (IROAST), which opened in April of 2016, is one of the Centers of Excellence in Kumamoto University. The aims of IROAST are the further promotion of international collaborations to establish international research networks in the following four advanced areas of science and technology: Nano Material Science, Green Energy, Environmental Science and Advanced Green Bio, in parallel with the development of young excellent researchers, promotion of ongoing cutting-edge research projects, and initiation of innovative interdisciplinary research projects. To achieve these goals, we will promote the international partnership with overseas universities and institutions. The ultimate goal of IROAST is to act fully and globally as a hub of world-class, cutting-edge research networks through the international brain circulations.



Dr. Takashi Hiyama,
Professor Emeritus of Kumamoto University
Distinguished Professor

01



Tenure-track Associate Professor
Dr. Ruda LEE

Research Topic

Development of Novel Therapeutic Strategy Using Iron Targeted Upconversion Nanoparticles for Parkinson's disease

Biological barriers to drug transport prevent the successful accumulation of nanotherapeutics specifically at diseased sites. To carry out tumor therapy efficiently, innovative design nanoparticles are needed as a new generation of nanotherapeutics. We are focusing on 1) site-specific delivery of therapeutics, 2) overcoming multi-drug resistance, and 3) disease diagnosis using fluorescence imaging sensors. This interdisciplinary research group consists of chemist (Korea), immunologist (Japan), nano-scientist (Australia), and veterinarian (Korea).

Research Topic

Development of an image analysis system to quantify multi-dimensional cytoskeletal organizations

Cytoskeleton is a key component of the cellular architectures and dynamics including cell division, growth, and differentiation. In our research unit entitled "Quantitative Bioimaging Unit", we are working on development of bioimage analysis framework to quantitatively evaluate multi-dimensional cytoskeletal organizations based on tight collaboration among experts in cell biology and bioimage informatics from United States, China, and Japan.



Tenure-track Associate Professor
Dr. Takumi HIGAKI

02

03



Tenure-track Associate Professor
Dr. Atsushi SAINOKI

Research Topic

Fundamental study on a CO₂ sequestration and stabilization technology using specialized microbes

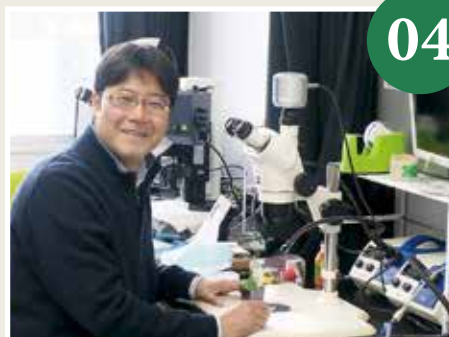
I'm working on sustainable mineral resource and energy developments while focusing on geothermal energy, deep underground mining and CO₂ sequestration. Particularly, attention is paid to the numerical simulation of induced seismicity and its application to characterize geo-mechanical behaviour of the deep underground rock masses, for the first two topics, whilst for CO₂ sequestration, it is aimed to develop a new technology to prevent CO₂ leak-off to the ground surface.

04

Research Topic

Regulatory cascade for shoot regeneration and meristem formation

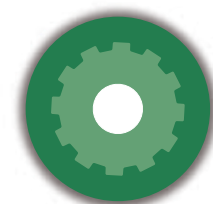
The aim of our group is to understand how plant stem cells are formed and how their activity is maintained. These are fundamental questions in plant developmental biology. To this end, we are collaborating with overseas researchers who are specialized in bioimaging, biomechanics and mathematical modeling, whereas our group conducts genetic analyses.



Tenure-track Professor
Dr. Mitsuhiro AIDA

IROAST Research Units

IROAST Research Units are targeting for the configuration of international joint research networks to promote interdisciplinary and cutting-edge research collaborations among researchers in the science and technology fields of Kumamoto University and overseas universities/institutes. We have launched 22 Research Units consisting of IROAST tenure-track professors, Distinguished Professors/Visiting Professors and their host professors, and their international collaborators.



Units of Young Researchers (IROAST) 4 groups

01

Development of novel therapeutic strategy using iron targeted upconversion nanoparticles for Parkinson's disease

Unit coordinator
Dr. Ruda LEE



Korea



Australia

03

Development of microbially-aided carbon sequestration technology

Unit coordinator
Dr. Atsushi SAINOKI



Australia



Japan

02

Quantitative Bioimaging

Unit coordinator
Dr. Takumi HIGAKI



China



USA



Japan

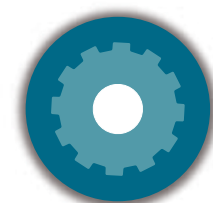
04

Plant Stem Cells and Regeneration

Unit coordinator
Dr. Mitsuhiro AIDA



Czech Republic



Units of Young Researchers (FAST, CWMD, IINa) 6 groups

05

Deep Learning for Hydrology

Unit coordinator
Dr. Kei ISHIDA



USA

07

Environmental Impacts of Ionic Solutes

Unit coordinator
Dr. Shin-Ichi OHIRA



China



USA

06

Radio Astronomy

Unit coordinator
Dr. Keitaro TAKAHASHI



Australia



Japan

08

Advanced Biomedical Evaluation System

Unit coordinator
Dr. Makiko KOBAYASHI



Singapore



JAPAN



- Fostering of next-generation researchers
- Configuration of internaional joint research network
- Promotion of interdisciplinary and cutting-edge research works



IROAST
Research Units

09 Bio-inspired Functional Molecular System

Unit coordinator
Dr. Yutaka KUWAHARA



USA France

10 Nanomaterials processing for medical, cosmetic, and environmental applications

Unit coordinator
Dr. Mitsuru SASAKI



France UK Canada



Spain Mexico

11 Development of Nano and Supramolecular Materials

Unit coordinator
Dr. Shinya HAYAMI



Australia Korea UK Italy

12 Plant Cell and Developmental Biology

Unit coordinator
Dr. Shinichiro SAWA



France Spain Switzerland



Units of World-leading Researchers 12 groups

13 RNA Biology

Unit coordinator
Dr. Tokio TANI



Switzerland

14 Nano-Organics and Nano-Hybrids

Unit coordinator
Dr. Makoto TAKAFUJI



France



Spain



China



Canada



USA

15 Nano-medicine and Drug Delivery System

Unit coordinator
Dr. Hamid HOSANO



USA



India



UK



Australia

16 Nano-medicine and Theranostics

Unit coordinator
Dr. Takuro NIIDOME



Korea

17 Multiscale Modeling of Soil and Rock Materials Using X-ray CT

Unit coordinator
Dr. Jun OTANI



France



USA

18 Medical Application of X-ray CT

Unit coordinator
Dr. Toshifumi MUKUNOKI



New Zealand

19 Advanced Structural Materials

Unit coordinator
Dr. Kazuki TAKASHIMA



China



UK



Germany



Australia

20 Microstructure Analysis and Grain Boundary Engineering

Unit coordinator
Dr. Sadahiro TSUREKAWA



Germany



Czech Republic



Austria

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

Unit coordinator
Dr. Shinya HOSOKAWA



France



UK



Hungary



Latvia

22 Hydrological Environments

Unit coordinator
Dr. Takahiro HOSONO



Germany



Indonesia



France

FAST: Faculty of Advanced Science and Technology, Kumamoto University.
CWMD: Center for Water Cycle, Marine Environment and Disaster Management
IINa: Institute of Industrial Nanomaterials
Each group have IROAST visiting professors and/or distinguished professors
*The Japanese flags show researchers from other universities/institutes in Japan.