

IROAST

Bringing together top young researchers from Japan and abroad to promote cutting-edge science and technology research

The International Research Organization for Advanced Science and Technology (IROAST) is where young researchers from around the world can work alongside world-renowned scientists to promote cutting-edge science and engineering research. Let's hear from IROAST Director Kazuki Takashima about the organization's goals.



IROAST website



Dr. Kazuki Takashima
Director, International Research Organization for Advanced Science and Technology

Providing a tenure track-based personnel system to enable young researchers to immerse themselves in their work

IROAST has two core missions. One is to nurture young researchers who can work at the forefront of the global research community, and the other is to promote international joint research with world-renowned universities and research institutions overseas. The organization has in place a tenure track-based personnel system to support the development of young researchers. "We strive to create an environment that allows young researchers to focus their efforts on research and train themselves as independent researchers. IROAST employs tenure-track faculty members, who are recruited through international open calls. So far, eight of these faculty members have gained worldwide recognition for several of their achievements, and five of them have moved to the Faculty of Advanced Science and Technology and the Institute of Industrial Nanomaterials to continue their researches. We also strive to create a virtuous cycle of brain gain by having established researchers with a proven track record move to other departments within the university," said Dr. Takashima.

To promote international joint research, the organization hires world's leading researchers from overseas universities as distinguished professors. "Besides promoting research with faculty members in the same field and writing international co-authored papers, students can, above all, receive direct feedback from world-renowned professors, which can be a highly motivating experience."

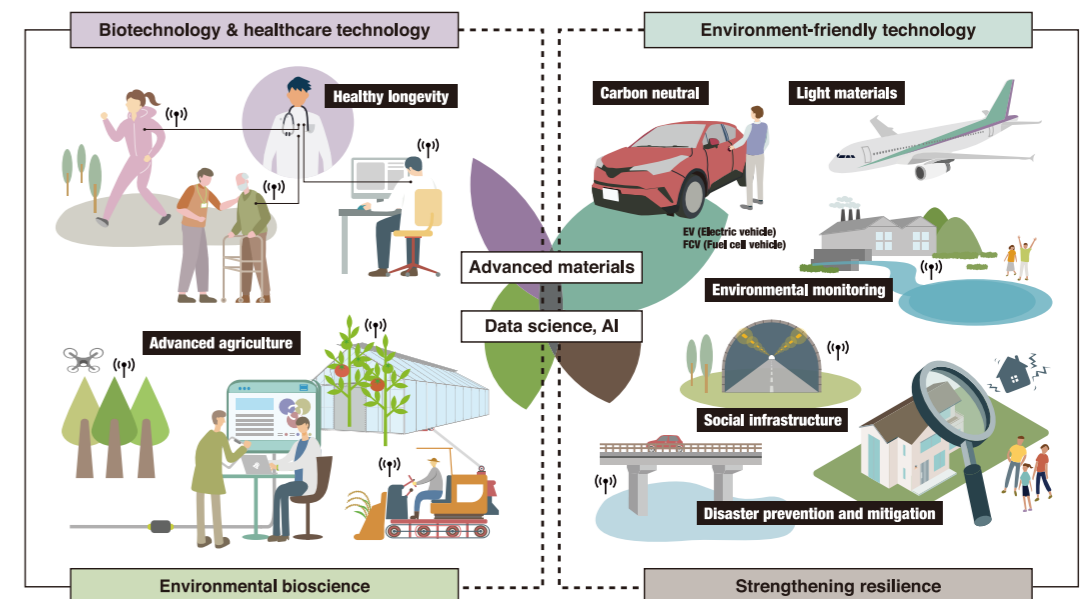
International research clusters between Kumamoto University researchers and several overseas universities and research institutions have also been established. Furthermore, overseas faculty members invited as visiting professors to IROAST are committed to, like the distinguished professors and other faculty members, supervising the students' research activities.

Promoting science and engineering research essential for building a well-being society

When asked about the reasons behind the organization's strong commitment toward promoting international joint research, Dr. Takashima said: "To develop new fields in science and technology, it is necessary to listen to thoughts and ideas from different perspectives. When researchers, even those in the same field, from different countries and having diverse backgrounds meet to share their knowledge, it can ignite ideas, which may lead to new developments that might never have happened otherwise. This can significantly enhance their research quality and content."

IROAST completed Phase 1 in FY 2021 (i.e. March 2022) and has just entered Phase 2. "The effects of unpredictable social conditions engendered by out-of-control events such as calamities and epidemics remind us once more of the necessity of building a well-being society where people can live with a sense of safety and security and enjoy the many pleasures that life has to offer. In striving toward such a lofty goal, we must be aware of the central role played by scientific and technological development," said Dr. Takashima. He added that the organization, during Phase 2, will focus its efforts on the development of an environmentally friendly society, with an eye on the post-COVID and post-SDGs era, and further promote advanced research in technologies that support the realization of a healthy and longevity society, and for strengthening resilience to natural disasters.

Promoting world-class and unique science and technology research for building a well-being society that may lead the way in the post-COVID and post-SDGs era



The organization has established a strong international joint research network with 43 overseas universities and research institutions.

Here are some of my research.

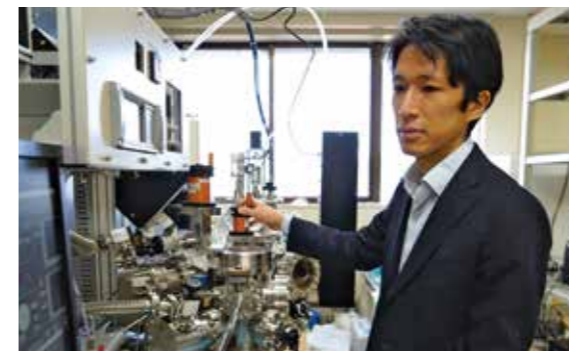
Researching ferroelectric materials required for modern technology used in all kinds of electronic devices

My field of research is ferroelectrics. "Ceramic capacitors" are essential components required for stable operation of electric circuits used in all modern electronic devices (e.g., smartphones and PCs). Ferroelectric materials are used in these ceramic capacitors, and their performance is determined by the materials' characteristics. My research goal is to develop ceramic capacitors that can store more electric energy at lower voltages. The use of smaller ceramic capacitors with higher energy storage capacity can

improve smartphone performance and processing speed and allow the ceramic capacitor space to be used for other functions.

Currently, a commissioned research with a Korean university-launched venture company is in progress. My Korean colleagues supply me with crystals that only they can fabricate; these are then processed and thermally treated in my laboratory to evaluate their basic and electric properties.

Such commissioned researches are also supported by IROAST, and the organization is notable for the considerable financial support provided to young researchers. In the future, in addition to semiconductors, I would like to continue my research on ferroelectric materials with a focus on improving medical technology.



Dr. Hiroki Matsuo
Tenure-track Associate Professor, International Research Organization for Advanced Science and Technology

