NAIST NARA INSTITUTE of SCIENCE and TECHNOLOGY

NAIST, the best Graduate School to outgrow your limits

A Springboard to New Frontiers

NAIST hosts leading scientists with distinctive professional styles. NAIST researchers reflect the state of the art in their research fields, and exchange stimulating ideas in a cozy, family-like atmosphere. NAIST provides a springboard to new scientific frontiers, assisting scientists to advance and substantiate their ideas and theories. Dr. Shinya Yamanaka, the 2012 Nobel laureate who developed iPS cells, germinated his ideas during his career at NAIST; these ideas eventually developed into groundbreaking discoveries.
Based on the work of our renowned scientists, many international students have chosen to study at NAIST.

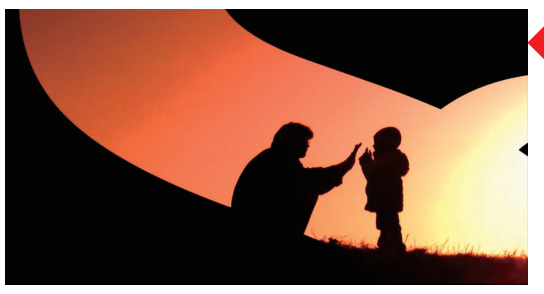
The Door Is Open for You

Founded in 1991 as a national university consisting solely of graduate schools, NAIST seeks to fulfill a vision of a new kind of research and education institute by exploring untrodden paths and making history. Many researchers and students have been successful here.
NAIST offers unrivalled benefits for international students, including preferential access to on-campus accommodations, various financial aid programs, and grading policies in which lack of Japanese-language proficiency is not a barrier to academic performance. Our lush, green campus is a great place to devote yourself to research activities.
NAIST welcomes applications from highly motivated and creative students.

Naokazu Yokoya
Executive Director for Research/Vice President

Learn more about NAIST.

Visit our website from the online Harvard Crimson



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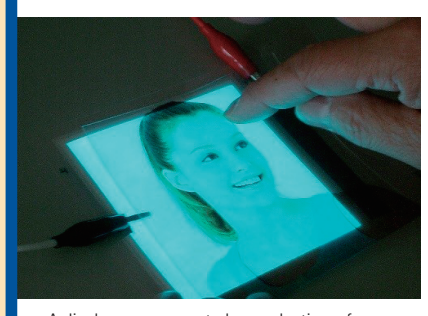
Q. Could you illustrate the innovative and pioneering nature of NAIST?

A. "Original and Unique Devices Created by OUR own hands"

Professor Yukiharu Uraoka, Information Device Science Lab



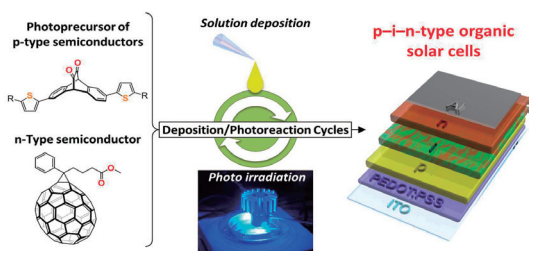
A display screen created on a plastic surface

Human society has benefited from advances in electronics engineering technology. Our laboratory focuses on development of information-processing components that can be applied to a wide range of electronic systems, including displays, LSI chips, memories, sensors, power control devices, and solar batteries. Laboratory staff assists students in gaining skills and knowledge related to new product design, prototyping, and evaluation. Researchers from Panasonic, Sharp, Sony, and other global consumer electronics companies collaborate with our researchers.
Our lab has its own clean room and other high-tech manufacturing facilities, providing a sophisticated research environment. Lively informal discussions frequently occur between students and staff and between projects, leading to spontaneous collaboration and integration of different research areas. Students will enjoy a unique learning experience here.
Following the motto "Creating Original and Unique Devices Using Your Own Hands," we aim to contribute to sustainable global development by creating alternative energy technologies and new energy-saving products. Why don't you join us? Students are a wonderful asset to our lab. We will do our best to maximize your learning experience and expand your future potential as a researcher.

Dr. Uraoka's Lab

A. "A Unique Multi-layer Structure-based Approach for Developing New Organic Photovoltaics"

Professor Hiroko Yamada, Photofunctional Organic Chemistry Lab



Our research objectives include the design and synthesis of new photofunctional organic molecules, as well as creation of electronic devices that utilize such compounds. Our lab has captured national and international attention for its unique research strategies. We have proposed a "photoprecursor method", in which insoluble organic semiconducting materials can be generated from the soluble precursors by in situ exposure of a film to blue light. Using this method, a three-layered p-i-n structure can be prepared by a solution process. This method will enable us to develop films that are more cost-effective than those generated by the alternative method, vacuum deposition on soft plastic films. In photovoltaic research, silicon-based devices are a common reference standard for evaluating efficiency. Currently, silicon-based solar cells have a maximum efficiency of 20–25%, whereas organic materials have reached 12% at best. Researchers around the world are trying to overcome this technical hurdle. As NAIST researchers work to create useful components and devices, they also grapple with understanding the reasons underlying their findings. We are attempting to make breakthroughs every day as we perform our studies in an advantageous research environment.

Dr. Yamada's Lab

A. "The transgenic rodent models created at our lab are being used for medical research around the world."

Professor Kenji Kohno, Molecular and Cell Genetics Lab

I would like to describe two pioneering initiatives of our lab.
The first initiative relates to our research on endoplasmic reticulum (ER) stress and associated cellular responses. I have been engaged in ER stress research since 1987, when this field was just starting to attract attention and recognition. As one of the pioneering scientists in this field, I sought to clarify the relationship between a variety of diseases and ER stress, and to produce findings useful for developing new therapies.
The second initiative is the creation of the toxin receptor–mediated cell knockout transgenic (TRECK-Tg) mouse or rat models. TRECK-Tg animals undergo diphtheria toxin-specific loss of target cells, enabling researchers to ablate target cells from living animals, without significant deterioration of the animal's condition, by administering diphtheria toxin at any given time and dose. The TRECK-Tg method developed at our lab has been used in mice and rats across the world to yield experimental disease models for medical research. You might be one of those scientists who could benefit from using this technique.

For some of Dr. Kohno's major publications of, please refer to:

Q. What features of NAIST are appealing to you?

A. "It provides a home for scientists who are passionate about investigating nature."

Professor Takashi Hashimoto, Plant Cell Function Lab

Prof. Hashimoto was once mentioned along with Kant and Goethe in a German-language scientific article on the spiral growth of plants.

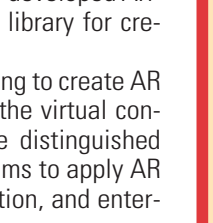
Climbing plants like the Japanese morning glory exhibit helical growth with fixed handedness. I seek to clarify the origins of left–right asymmetry on the molecular, cellular, and organ levels. I initially approached this problem by isolating dozens of helical growth mutants in the model plant *Arabidopsis thaliana*, which normally exhibits radial symmetry. This early research (published in Nature in 2002, and covered in newspapers and scientific magazines worldwide) identified the microtubule cytoskeleton as the cellular determinant of left–right asymmetry in plants. Using advanced techniques in cell and molecular biology, I hope to reconstitute asymmetric microtubule organization in a cell-free system and elucidate the origins of molecular asymmetry, which eventually manifests, for example, as the right-handed helical growth of the morning glory.
NAIST provides a friendly environment devoted to basic research, and hosts a community of researchers with a wide variety of basic and applied expertise. Because NAIST is a small-scale postgraduate institution with approximately 1000 students, the campus fosters genuine interactions among students and faculty, allowing new ideas to develop into tangible results. The shared experimental facilities are top-notch, empowering scientists to conduct cutting-edge studies. We encourage motivated students to join us in exploring the wonders of nature.

Dr. Hashimoto's Lab

A. "The hallmark of NAIST is the willingness to chart new paths."

Professor Yuji Matsumoto, Computational Linguistics Lab

The members of our research laboratory have been working on computer processing of English, Japanese and other languages using large volumes of linguistic data, and have developed various language analysis tools. Some of these tools are available for free download on our web site. They have been downloaded nearly a million times altogether, and have been applied as de facto analysis tools for natural language processing. Our lab is among the world's leaders in computer-based language processing.



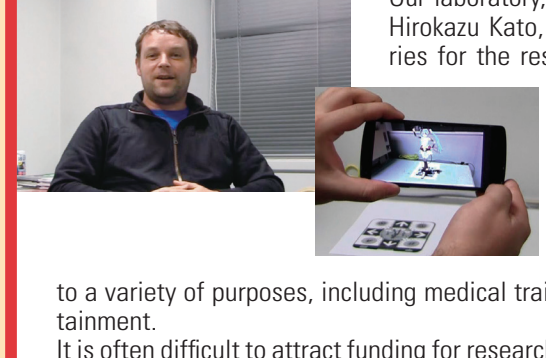
NAIST provides a superb working environment for researchers in this field; it houses an elite group of scientists who are allowed to pursue their research in an independent and flexible manner. Our established policy is to eliminate unproductive and non-essential functions and duties, in order to allow more research time. NAIST recruits students and experts from a variety of fields and background to create a "melting pot" of different interests and talents. The research facilities are augmented with the latest computing servers, which have a large number of processing units. Furthermore, NAIST fosters a supportive environment for students and budding researchers, and provides an ideal place for devoted students. You will never regret choosing to study at NAIST.

For a list of downloadable linguistic analysis tools, visit:

Q. How would you describe your experience at NAIST?

A. "NAIST provides a well-funded and flexible research environment."

Associate Professor Dr. Christian Sandor, Co-Director: Interactive Media Design Lab



Our laboratory, which I am co-directing with Professor Hirokazu Kato, is one of the world's leading laboratories for the research and development of Augmented Reality (AR). Prof. Kato developed ARToolkit, a widely used library for creating AR applications.
We are now endeavoring to create AR experiences in which the virtual content can no longer be distinguished from reality. Our lab aims to apply AR to a variety of purposes, including medical training, engineering education, and entertainment.
It is often difficult to attract funding for research projects that are not necessarily aimed at commercialization or addressing urgent social issues. In Japan, however, it is possible to conduct such research; one can conduct fundamental research, even on what some might call "crazy" projects. This feature, which is very specific to Japan, is ideal for a university setting. Among research universities in Japan, NAIST provides a particularly prestigious environment. I like this young and dynamic organization because of its strong focus on research, good funding, flexibility, and freedom.

Message from Dr. Sandor