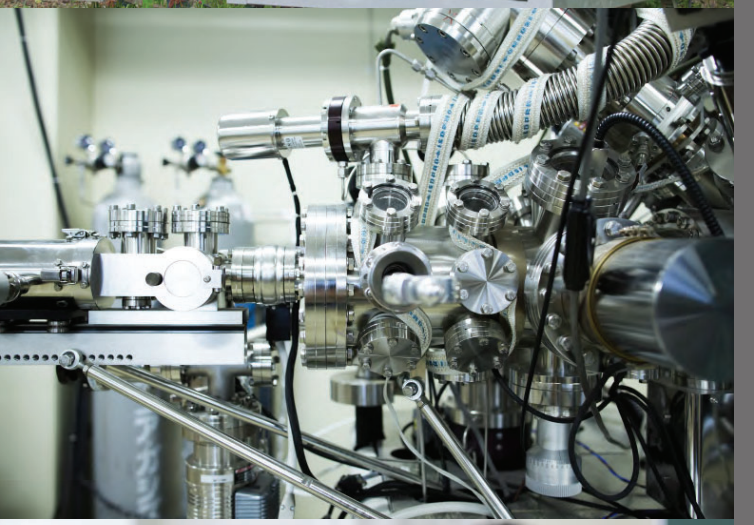
Nagasaki University School of Engineering & Graduate School of Engineering

Nagasaki University 32°47′ 10″ N 129°51′ 59″ E




2023

"Exciting Moments" of Discovery

Researching for many years can bring about "exciting moments," but they are rare and happen only once every few years or once a decade. These moments drive us to work hard, waking up early and dedicating long hours in the lab to examine and coding. They come when we succeed in proving something unknown to others, based on our own knowledge. This is a moment of validation when we confirm, with our own hands, knowledge that others have not yet discovered. This experience is addictive and drives us to continue researching, even through failures and hardships.

In today's world, information and advanced technology are easily accessible, but original data requires a high level of specialized knowledge and creativity. To obtain data that others have not yet obtained, we must create our own instruments and code, sorting through what is known and unknown in the world to devise a research strategy. This requires not only a deep understanding of the subject matter but also interdisciplinary knowledge. Combining knowledge from physics, chemistry, and environmental engineering, for example, can lead to innovative solutions.

At Nagasaki University, we strive to achieve "Planetary Health" and promote livable societies on a global scale. By acquiring both expertise and a broad range of knowledge at the University, we can enjoy "exciting moments" together and work towards realizing "Planetary Health."

Dean of the Faculty of Engineering / Dean of the Graduate School of Engineering

Prof. Sakaguchi Daisaku

Dreams for the Future

■ Green Innovation

Development of robotics and new medical instruments, for integration with IoT and deep learning through cooperation between medics and engineers

With regard to medical innovation, a clear understanding of medical needs, combined with a means to rapidly prototype proposed solutions, ready for evaluation has been found to be key. Fig.1 shows a CAD (Computer Aided Design) design of a new kind of forceps. Fig. 2 shows a functional prototype of the forceps made with a high quality 3D printer, making immediate evaluation of the mechanism possible. The proposed laparoscopic forceps are designed to delicately hold organs and provide for less invasive surgery as well as provide a mechanism that can be robotically assisted. This project was initiated by a combined team of medical and engineering staff and students. This and many other projects are underway to provide for a new generation of assistive mechanisms and systems that can integrate robotics, IoT and deep learning in such a way to support a new generation of medics, nursing and welfare staff through collaboration between medicine and engineering faculties.

Fig. 1 CAD design of a new kind of forceps

Fig. 2 Functional prototype of the forceps made with a high quality 3D printer

■ The Novel · Creative Research

Materials science research on innovative low carbon technologies

Nowadays, we are facing severe environmental issues such as global warming and climate change. Green house gas emissions, convincingly a major cause of the global warming are mainly derived from the transportation sector and electricity power generation based on the consumption of fossil fuels. This project focuses on the two research themes: (1) Development of innovative materials for next-generation energy storages devices, (2) Development of novel synthetic technologies of energy resources. For example, we have been developing new materials for high performance Li-ion batteries with high power, high energy and safety, to apply to electric vehicles and electric power grid connection systems. Furthermore, we are strengthening the developments of novel technologies for CO_2-reduction and conversion into valuable carbon resources. We are aiming at essential innovation by seeking new breakthrough technologies and chemical transformations, in addition to addmissing the perspectives of environmental issues.

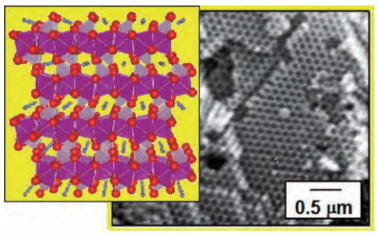


Fig.3 SEM image of an electrode nanomaterial and its crystal structure

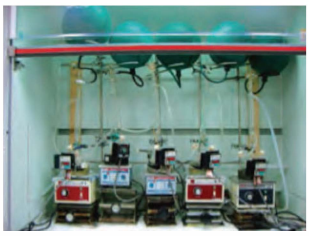


Fig.4 Organic synthetic reactor for CO2 transformation

Research project on innovative next generation magnets – “Control of Nanostructure” and “Alloy Composition Exploration” –

A conventional Nd-Fe-B permanent magnet is an attractive material and has been widely used, however we are still searching for new materials as a next generation permanent magnet from a future application point of view.
In our project, we focus on the preparation of various permanent magnet materials by talking account of analysis results with the micro magnetic theory. For example, the computer simulation indicated that (BH)max exceeded 300 kJ/m3 under the high temperature at 473 K in Sm-Co/α-Fe nanocomposite magnets with multi-layered structure (see Fig. 5). The value was much higher than that of an Nd-Fe-B magnet. We, therefore, try to fabricate Sm-Co/α-Fe multilayered films by using a PLD (Pulsed Laser Deposition) method as shown in Fig.6. It was clarified that the control of microstructure of Sm-Co permanent magnets including α-Fe phase is an effective method of developing a high temperature magnet. Our group also attempt to control the microstructure for Sm-Co/α-Fe nanocomposite magnets synthesized by using a wet process.
We will demonstrate several prominent candidates as a next generation magnet through the simulational and experimental approaches.

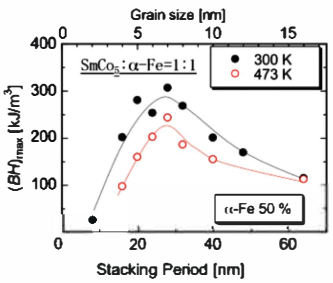


Fig.5 Computer simulations of (BH)max at 300 and 473 K , respectively, in Sm-Co/a-Fe nanocomposite magnets with multi-layered structure.

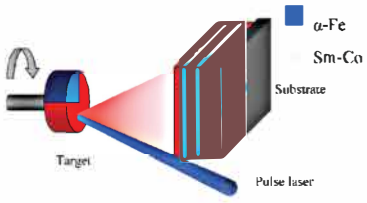


Fig.6 PLO method of preparation of Sm-Co/a-Fe nanocomposite magnets with multi-layered structure.

School of Engineering and Graduate School of Engineering

Organization

(As of 1 May, 2022)

Division	Engineering Field	Number of Faculty Members				
		Professor	Associate Professor	Assistant Professor	Research Associate	Total
Division of System Science	Engineering for Sustainable Development	5	3	0	0	8
	Human and Engineered Environmental Science	5	8	4	0	17
	Mechanical Science	5	3	7	0	15
Division of Electrical Engineering and Computer Science	Electrical and Electronic Engineering	5	10	4	0	19
Division of Chemistry and Materials Science	Surface and Interfacial Nano-Science	4	5	5	0	14
	Advanced Materials Science	3	2	2	1	8
	Molecular and Life Science	3	6	0	0	9
Affiliated Division	Eco Materials Science	1	0	0	0	1
	Naval Architecture and Ocean Engineering Laboratory	1	0	0	0	1
	Total	32	37	22	1	92

History

1966.4.1	The Faculty of Engineering (Department of Mechanical Engineering and Electrical Engineering) was established. The Department of Structural Engineering, Department of Civil Engineering, Department of Materials Science and Engineering, Department of Industrial Chemistry, Department of Electrical and Electronic Engineering, Department of Computer and Information Science were established in following years.
1971.4.1	The Advanced Courses (Mechanical Engineering, Electrical Engineering, and Structural Engineering) were established. The Advanced Courses in Civil Engineering, and in Materials Science and Engineering were established subsequently.
1987.4.1	The Department of Marine Science and Development was established in the Graduate School of Engineering Science (Doctoral Course). It was transferred to the Graduated School of Marine Science and Engineering in the following year.
2000.4.1	The Graduate School of Marine Science and Development was reorganized into the doctoral course of the Graduate School of Science and Technology. Along with this, the Graduate School of Engineering (Master's Course) was transferred to the Graduate School of Science and Technology (Doctoral Course).
2010.3.31	Due to the establishment of Advanced Computing Center, Ultra-High Speed Many Core Computing Research Center was discontinued.
2011.4.1	Faculty of Engineering`s seven departments (Mechanical Systems Engineering, Electrical and Electronic Engineering, Computer and Information Sciences, Structural Engineering, Civil Engineering, Materials Science and Engineering, and Applied Chemistry) were restructured into one engineering department, and renamed the School of Engineering. The Graduate School of Science and Technology was restructured to establish the Graduate School of Engineering and the Graduate School of Fisheries Science and Environmental Studies.

Programs and Majors

Educational Philosophy and Aim

Philosophy of the School of Engineering

Based in Nagasaki, a city echoing the heartbeat of Asia, the school seeks to contribute to the sustainable development of society by acquiring intelligence, spirit, and a strong understanding of science and technology to shape the future.

Educational Aim of the School of Engineering

Extensive educational programs are provided to deliver a strong fundamental education and robust knowledge of the individual specialties, while also focusing on students acquiring technical ethics, communication skills and task researching capabilities.

Educational Philosophy and Aim of the Graduate School of Engineering

(Educational Philosophy)

As an educational and research base for advanced engineering which coexists with nature and commits to the sustainable development of human society, the Graduate School of Engineering will foster highly professional engineers and researchers who possess professional and interdisciplinary knowledge along with as high expertise across a wide range of engineering topics, and who will be able to play an active role in the international field. We will also contribute to promoting innovative science and technology of next generation through conducting pioneering and innovative research.

(Aim)

To develop in students professional and interdisciplinary knowledge along with high expertise across a wide range of engineering topics, and to cultivate their skills to explore and solve problems as well as their capabilities to conduct internationally pioneering research and development.

(As of 1 May, 2022)

Course			Program	Number of Students
School of Engineering			Mechanical Engineering Program	352
			Electrical and Electronic Engineering Program	342
			Computer and Information Science Program	76
			Structural Engineering Program	195
			Civil and Environmental Engineering Program	183
			Chemistry and Materials Engineering Program	303
Graduate School of Engineering	Master's Course	Department of Advanced Engineering	Mechanical Engineering Program	96
			Electrical and Electronic Engineering Program	94
			Computer and Information Science Program	64
			Structural Engineering Program	40
			Civil and Environmental Engineering Program	23
			Chemistry and Materials Engineering Program	95
			Water and Environmental Science Program (Formerly:Water and Environmental Engineering Program)	14
			Frontiers of Marine Science Program	9
	Doctoral Course (3 Year Program)	Department of Science and Technology	Systems Engineering Program	29
			Electrical Engineering and Computer Science Program	8
			Chemistry and Materials Science Program	5
			Water and Environmental Science Program	7
	Doctoral Course (5 Year Program)	Department of Advanced Technology and Science for Sustainable Development	Next Generation Energy System Program	5
			Advanced Functional Materials Program	9

From April 2022, the ″Frontiers of Marine Science Program″ was established, and the ″ Water and Environmental Engineering Program″ became the″Water and Environmental Science Program″.

Mechanical Engineering Program

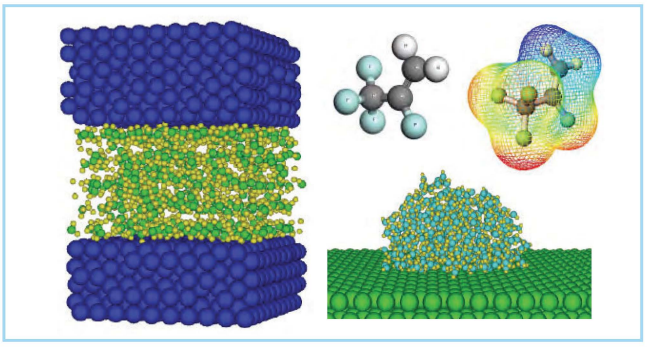
Overview

This program aims to cultivate students' understanding, knowledge and interest in advanced mechanical engineering and professional skills to contribute to the development of an international society. The program offers independent research topics focusing on the following two research perspectives: "Assistive mechanisms for people" and "Environmentally friendly systems".

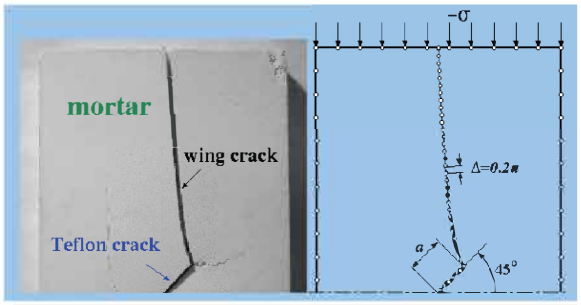
Research Contents

Assistive mechanisms for people	Research as for refocusing mechanical engineering toward technologies which can enrich people's lives. For instance, -Biomechanics for collaborative robots, maintenance robots for infrastructure -Functional materials, failure analysis and strength evaluation for safe designing -Advanced manufacturing: high-speed laser inspection system, ultra-precision machining
Environmentally friendly systems	Research as related to the development of machines to support the environmental conservation, the progression of contemporary society, and for contributing to green construction. -AI assisted designing for tidal turbine systems utilizing renewable energy -Molecular simulation for new environmentally friendly substances -Combustion system optimization for clean diesel engines

Prototype tidal turbine

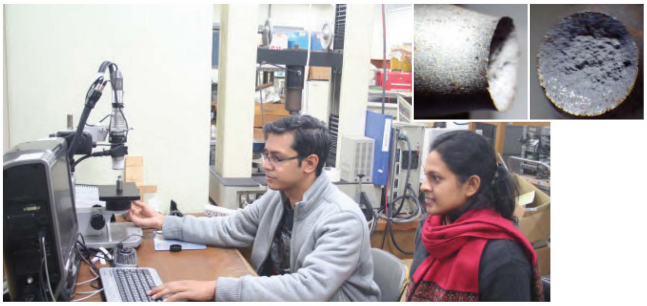


Molecular simulation

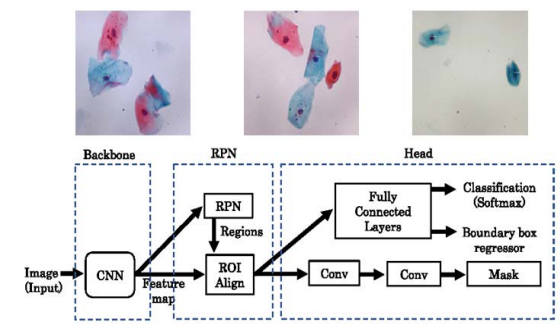


Uniaxial compression of Mortar Sample and observed failure

Crack path simulation by Body Force Method



Microscopic observation of fracture surface



Cell nuclear recognition in oral cytology using artificial intelligence

3D measurement of car body

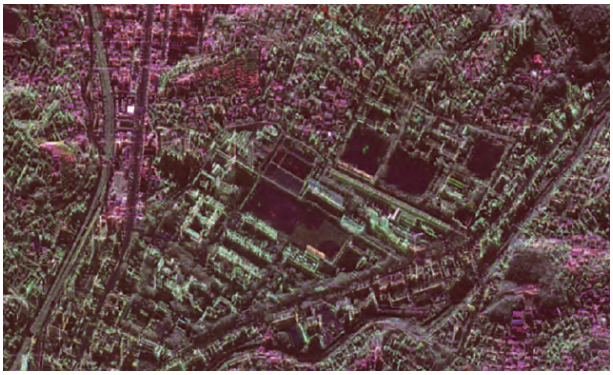
Electrical and Electronic Engineering Program

Overview

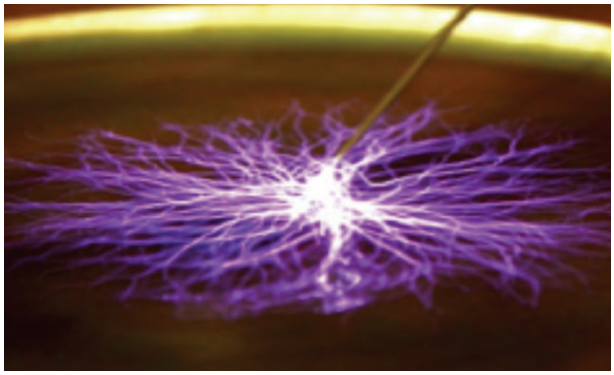
Acquiring the basic knowledge of the field of electrical and electronic engineering, as well as more advanced, highly specialized knowledge, practical skills, and applied skills to flourish internationally.

Research Contents

Electric Energy and Plasmas	High voltage engineering and discharge phenomena (Insulation design, discharge in super critical fluid, discharge on water, Silent discharge, Ozonizer)
	Plasma science and technology (Plasma processing, Plasma diagnostics)
Control Systems	Control theory and applications (Microcomputer control of inverter-fed induction motor and PM synchronous motor, power converter and control of distributed generation and power conditioner)
	Electric machinery and applications, Power electronics (Development and control of novel motor and generator, Design analysis of electric machinery, Vibration energy scavenging by mechanical pendulum, AC to AC power conversion system, High performance motor drive system, Full vehicle simulation)
Electronic Circuits and Devices	Power electronics for smart green systems, Switching power supply for green IT and HVDC systems, Digital control for DC-DC and AC-DC converters, Intelligent signal processing, Image recognition, Sensing circuit system
	Magnetics (Computer simulation of magnetic properties, Development of magnetic materials for Micro-machines, Application of magnetic materials)
Electromagnetic Waves and Communications	Information and communications technology by electromagnetic wave (Optical communication, Development of high functional antennas such as multiband, wideband antenna)
	Electromagnetic wave theory (Electromagnetic wave scattering, Inverse scattering, Metamaterials, etc.) and its applications (Microwave imaging, Microwave tomography, Concrete radar, Polarimetric synthetic aperture radar, Radar target classification, Target tracking, Monitoring of the living body)
Frontier	Optical science and engineering (Ultra-high speed optical transmission devices and biophotonic sensor to detect pandemic virus)



False color image around Bunkyo Campus, Nagasaki University taken by airborne synthetic aperture radar



Surface Discharge on Water Generated by Pulsed Power

Computer and Information Science Program

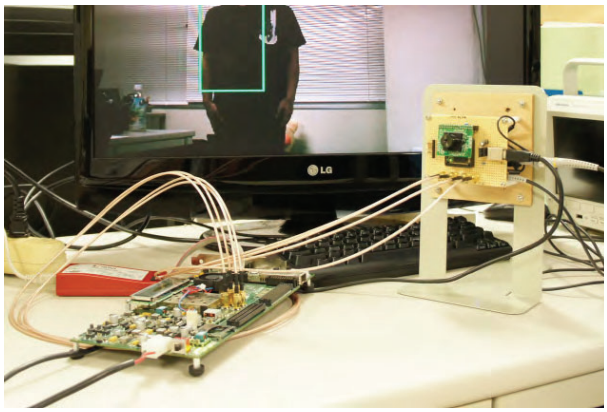
This program is only for Graduate School of Engineering.

Overview

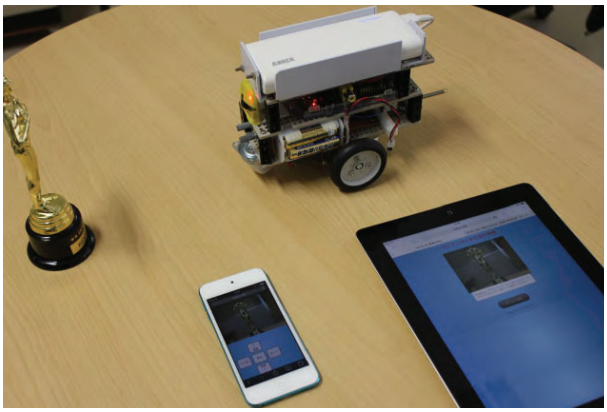
Acquiring a problem solving ability with a deep knowledge of engineering theory of computer and information science, as well as knowledge of hardware, software, and applications related to wide-range of fields.

Research Contents

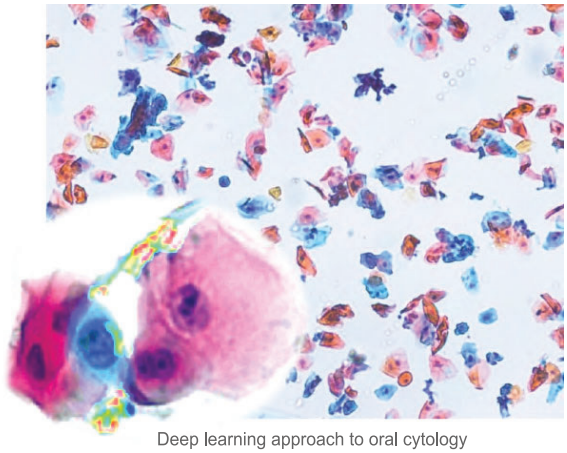
Computer Science	- Information extraction - Computer architecture - Real-time information processing - Network performance evaluation - Distributed artificial intelligence - Programming languages - Network applications - Reconfigurable Computing
Theoretical and Applied Software Science	- Computer vision and pattern recognition - Sparse modeling - Information retrieval and data clustering - Pattern information processing - Algorithmic number theory and its application to cryptography - Information security
Applied Information System Engineering	- Image processing, image coding and digital watermarking - Computer graphics - Human computer interaction - Speech processing - Remote sensing - Machine learning and data mining - Software architecture



Highly-efficient FPGA implementation of human detection with a deep-pipelined stream architecture



Research of Internet of Things (IoT); everything connects to the Internet.



Deep learning approach to oral cytology

Rehabilitation support system using virtual reality

Structural Engineering Program

Overview

This program fosters advanced professional engineers and researchers to correspond to the needs of the structural engineering field in an industrial society, by acquiring advanced specialized knowledge with an international perspective.

Research Contents

Structural Analysis	Research in fundamental theories and applications of a structural analysis : Static behavior, dynamic stability and response analysis of structures. Analysis and control of large systems. Computer simulation and computer graphics.
Structural Systems	Research into development of structural materials, construction techniques, optimum planning and design of structures, for harmonizing structures between humans and the environment, by interpreting each structural system field (planning, design and construction) systematically.

Development of low-cost sesimic retofitting technology by concrete filled steel tublar brace acting in compression for old buildings

Research on management of dwelling environment, landscape-control and preservation of traditional houses

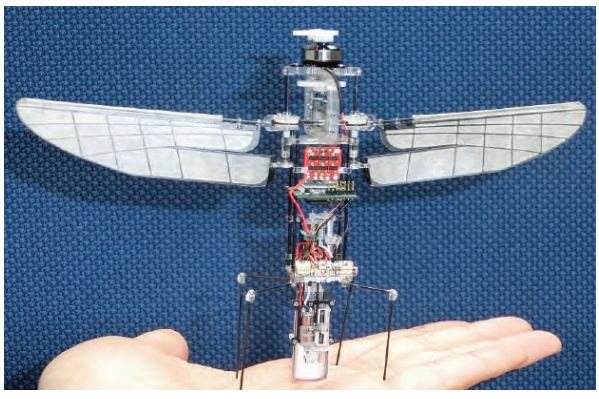
Gunkanjima
(World cultural heritage)

Nagasaki Atomic bomb historic ruins
(National historic site)

Performance evaluation and development of conservation methods of historical concrete structures

Optical measurement | Measured data | FEM analysis

Elucidation of mechanisms of degradation and disturbance of structures by using an optical measurement and FEM



Development of a bio-inspired flapping drone

No plants (Reference)

With plants (Petal)

With plants (Lettuce)

With plants
(Mixing red and green leaves)

Feasibility study of indoor plants arranged in workplaces on worker's mental health

Civil and Environmental Engineering Program

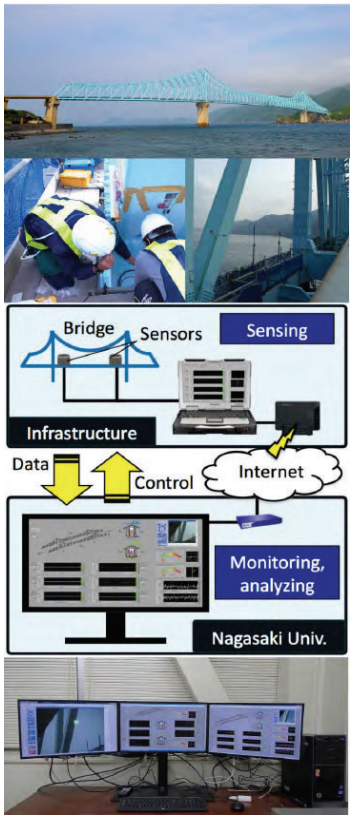
More Detailed Information
http://www.cee.nagasaki-u.ac.jp/en/introduction/

Overview

Acquiring of certain basics of engineering, a broad expertise related to civil engineering, as well as story thinking ability and analytical capability.

Research Contents

Geoenvironmental Engineering	- Dynamic characteristics of geomaterials - Design and maintenance management of geotechnical and rockmass structures - Numerical analysis and model tests for evaluation of slope stability under heavy rainfall - Evaluation of soil stabilizer with various recycled materials for ground improvement
Structural Engineering	- Static and dynamic analysis of civil structures - Techniques for design and maintenance management of structures - Remote online monitoring of physical phenomena on civil structures - Controlling techniques for structural vibration
Environmental Engineering and Planning	- Urban and regional planning based on history and townscape - Remote sensing of hydrology and its application to disaster prevention
Hydraulic Engineering and River Engineering	- Environmental assessment and improvement of enclosed coastal seas and lakes, performance of hydraulic structures - Numerical analysis of change of water environment, evaluation of pollution load and its reduction, water quality improvement technologies



Remote sensing and monitoring of infrastructures

River Flooding of Chao Phraya in 2011


Learning construction techniques via field visit


Urban maintenance in consideration of natural environment

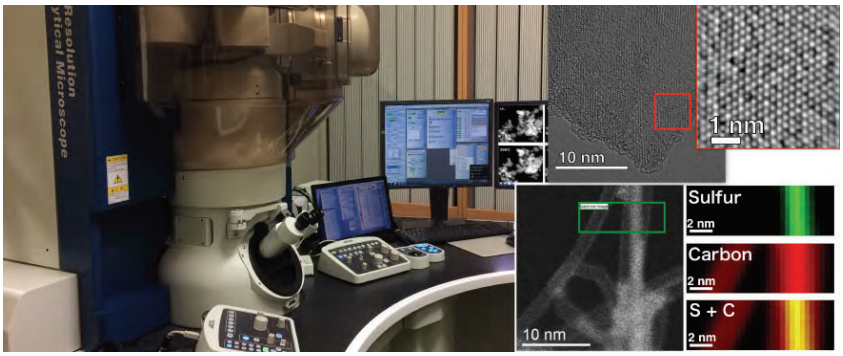
Chemistry and Materials Engineering Program

Overview

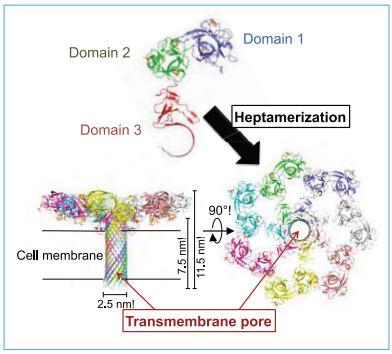
This program provides a high-quality education that enables students to be ready for challenges in next-generation society with interdisciplinary knowledges and skills. Chemistry and materials science are expected to play important roles to realize game-changing technologies for sustainable societies: e.g., efficient synthesis of novel chemicals for medical and pharmaceutical products, and development of new materials for effective energy conversion/storage systems. Systematically designed classes and research activities in laboratories enhance students' fundamental knowledges and expertise in molecular science, materials engineering and bioengineering. A lot of graduates have been globally active in both academia and industries.

Research Contents

Advanced Materials Science	Thermoelectric materials; Microstructure analysis by transmission electron microscopy (TEM); Amorphous superalloy coatings; Metallic multilayered nanowires; Ferromagnetic ordered alloys; Inorganic/organic hybrid materials; Rapid photo- and bio-degradation of polymeric materials; Polymer and organic chemistry by using carbon dioxide; Hydroxyapatite-based nanomaterials for biomedicine and drug delivery; Graphene-based composite materials with multiple functions.
Surface and Interfacial Nano-Science	Gas sensors utilizing semiconductors and other functional ceramic materials; Synergistic function of bio-inorganic composite materials; Chemistry of adsorbents and heterogeneous catalysts; Energy storage device materials related to advanced batteries and capacitors; Nanoporous materials; Nanoscale analyses; Dynamic molecular assemblies and ultra-thin films at electrified interfaces; Stimuli responsive polymers; Redox-active ionic liquids; Functional elastomers.
Molecular and Life Science	Synthesis and application of photofunctional coordination compounds; Small molecule activation mediated by transition metals; Efficient and highly selective organic synthesis; Transition-metal catalysis towards organic synthesis; Design and total synthesis of novel antitumor agents based on natural products; Artificial and modified enzymes via protein engineering; Structural and functional analyses and genetic engineering of bioactive proteins.

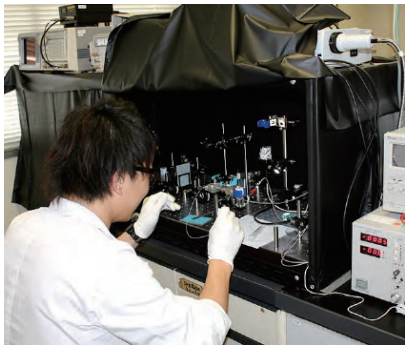


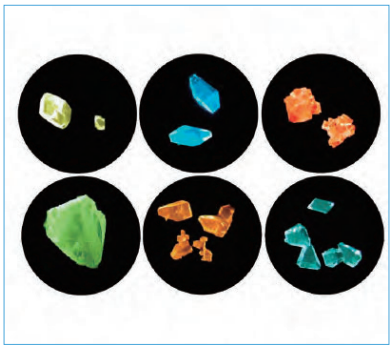
High resolution scanning TEM (upper right: TEM image of 2D inorganic compound and the filtered image in red frame, bottom right: STEM image of sulfur-introduced “single-walled carbon nanotube (SWCNT)” and electron energy loss spectroscopy (EELS)-mapping image in green frame)



X-ray crystal structure of the pore-forming protein from the marine invertebrate Cucumaria echinata


Personal organic synthesizer "ChemiStation" for individual stirring and control of liquid temperature


Spectroscopy of electrified interfaces by reflection and fluorescence to track molecules


Photoluminescent heteropolynuclear Pt complexes containing Au, Ag and Cu

Water and Environmental Science Program

Overview

The program emphasizes a practical and multidisciplinary approach to solving environmental problems. The program comprises lectures, practicums and an individual research project. Teaching in the program focuses on fundamental understanding in water treatment technologies, monitoring of water environment and numerical modeling of water environment such as lake or ocean. Students learn more practical techniques for water treatment and monitoring thorough practicums at the same time. Moreover an internship program in a private company or a water treatment facility will be carried out for students.

Research Contents

Water treatment, water reuse and wastewater treatment	The program will provide you with a fundamental and practical knowledge about conventional and advanced water and wastewater treatment technologies. You will study on advanced water treatment and re-use technologies using membrane separation systems such as nanofiltration systems. Development of advanced materials such as new photocatalysts and polymer materials for water treatment is an important topic. Moreover, appropriate water and wastewater treatment technologies for developing countries will be studied collaborating with South East Asian and African countries.
Monitoring and simulation on water environments and aquatic ecosystem	The program will provide you with theoretical background and practical knowledge about water quality, monitoring and computer simulation of water environment. You will study about coastal environment, inner bay and freshwater environment by several advanced monitoring techniques and eco-hydraulic computer simulation models. Hydrology and water resource analysis using satellite data are remarkable research topics. Moreover, development of water purification system for eutrophication lakes and reservoirs will be studied using mechanical, biological and ecological methods, especially for a countermeasure of harmful cyanobacteria.

Experiment on an advanced water treatment

Microscopic observation and isolation of phytoplankton collected from reservoirs (Nagasaki, Japan)

Practicum of wastewater treatment using membrane bioreactor (MBR) in Nagasaki University

Water sampling for water quality analysis and plankton surveys in a reservoir.

Frontiers of Marine Science Program

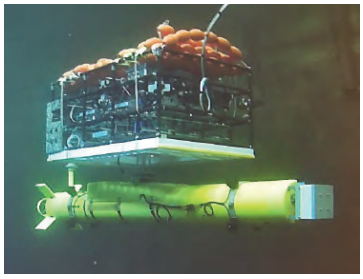
Overview

This program provides advanced topics in marine science. Students will gain comprehensive and interdisciplinary knowledge needed for marine science, where expertise in engineering science, fisheries, and environmental science is essential. Students will participate in hands-on research in the marine field of ocean observation, the utilization of marine resources, and environmental conservation.

Ocean Observation

Understanding the vastness of the ocean, with its multitude of species, is an important step in beginning marine research. In this regard, students will learn about state-of-the-art oceanographic measurement technologies such as marine robots, satellite remote sensing, and bio-logging techniques. It is also important to know how to utilize the information obtained from these technologies to ensure that we work in harmony with nature.

Dolphin robot



AUV Docking Station

Utilizing Ocean Resources

Ocean resources such as wind, wave, and tidal currents are expected to become major sources of energy as they do not produce carbon dioxide. In this regard, students will understand the principles and challenges faced using marine energy resources. One such specific application of this energy is to support the next-generation of aquaculture technology. Students will also learn methods of extraction and synthesis of marine resources, basics of pharmaceutical development, and advanced uses of marine organisms.

Tidal current turbine

Environmental Conservation

The problem of marine pollution, much of which is caused by waste mismanagement, is becoming increasingly apparent in many forms. This highlights the various pollution problems currently present in the oceans, the decline of marine resources, and what approaches can be taken to prevent and protect this precious resource.

Marine debris and plastic investigation

Department of Advanced Technology and Science for Sustainable Development
(5 Year Doctoral Degree Program)

Overview

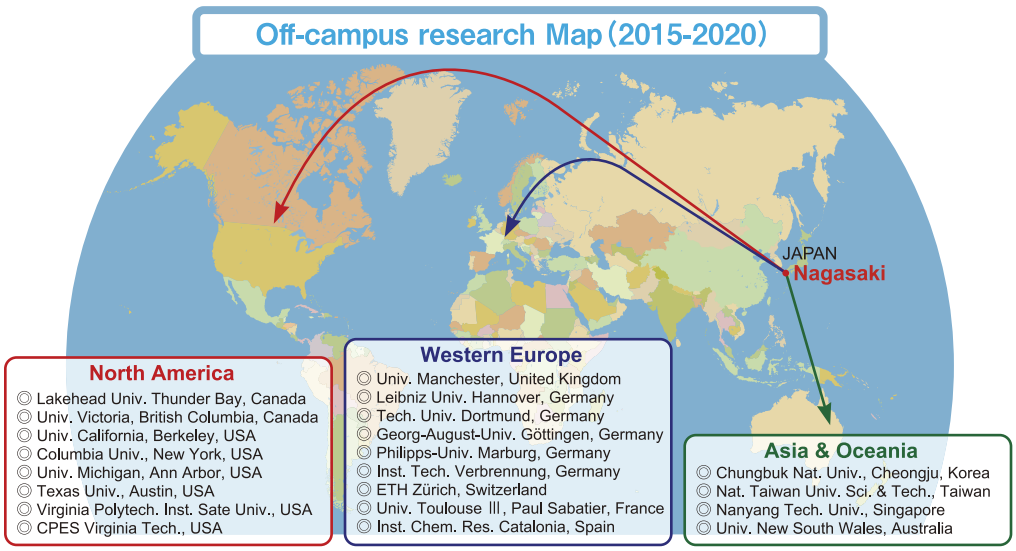
Our department will provide a broader and deeper educational and research environment to highly motivated students in the area of energy systems (Next Generation Energy System Program) and high performance materials (Advanced Functional Materials Program). We will provide students with opportunities to realize sustainable development, to invent technology, and to discover materials that improve society's access to clean and effective energy.

Research Contents

Next Generation Energy System Program	・Analysis of Liquid Atomization Process ・Development of Power Electronics Circuit for Distributed Power System ・Analysis of Damage and Fracture in Composites and Bio-materials ・Development of Energy Storage Device Materials via Nanostructural Control ・Design of High Reliability Insulation in Energy Transportation and Conversion System ・Fabrication of Functional Metallic Materials Using Electrodeposition Technique ・Development and Structural Analysis of Thermoelectric Materials
Advanced Functional Materials Program	・Development of Efficient Organic Synthesis for Functionalized Materials ・Advanced Design of Electrified Interfaces for Functional Molecular Assemblies ・Design, Control and Application of Functional Ceramic Materials ・Development of High Performance Magnetic Materials via Control of Nanostructure ・Precise Control of Polymer Degradation and Synthesis of Green Polymeric Material ・Machining and Measurement of Functional Material ・Activation of Small Molecules by Transition Metal Complexes ・Analysis of Interaction between Plasma and Solid Surface

Off-campus research

All students of the Department of Advanced Technology and Science for Sustainable Development must participate in the "off-campus research" program during their 4th year of study. In this program, they are required to study abroad for at least 3 months under normal circumstances. The following map shows all institutions and universities that hosted our students during 2015-2020.



International Exchange Agreement of Academic Exchange with Oversea Institutes

Jeju National University (Korea)	1988.01.26
Fuzhou University (China)	1992.03.04
University of Naples Federico Ⅱ (Italy)	1998.05.04
Tongji University (China)	2001.11.12
Sungkyunkwan University (Korea)	2006.03.28
Shandong University (China)	2010.11.01
Shandong University of Science and Technology (China)	2010.11.01
Chonbuk National University (Korea)	2010.11.01
Universidad Pontificia Comillas (Spain)	2013.07.25
Heriot-watt University (United Kingdom)	2014.10.01
University of Edinburgh (United Kingdom)	2014.10.01
Yangon Technological University (Myanmar)	2015.07.20
Technical University of Civil Engineering Bucharest (Romania)	2016.07.12
Delft University of Technology Faculty of Mechanical,maritime and Materials Engineering (Netherlands)	2016.08.28
Ho Chi Minh City University of Technology (Vietnam)	2018.08.27
Technical University of Dortmund, Faculty of Chemistry and Chemical Biology (Germany)	2018.10.05
Dalian University of Technology (China)	2018.12.06
Philipps-Universität Marburg (Germany)	2019.04.30
National University of Civil Engineering (Vietnam)	2020.01.31
Universita' Politecnica delle Marche (Italy)	2020.06.15
Vietnam National University Ho Chi Minh City - University of Science (Vietnam)	2022.01.01
Shandon University (China), Sungkyunkwan University (Korea)	2022.03.31

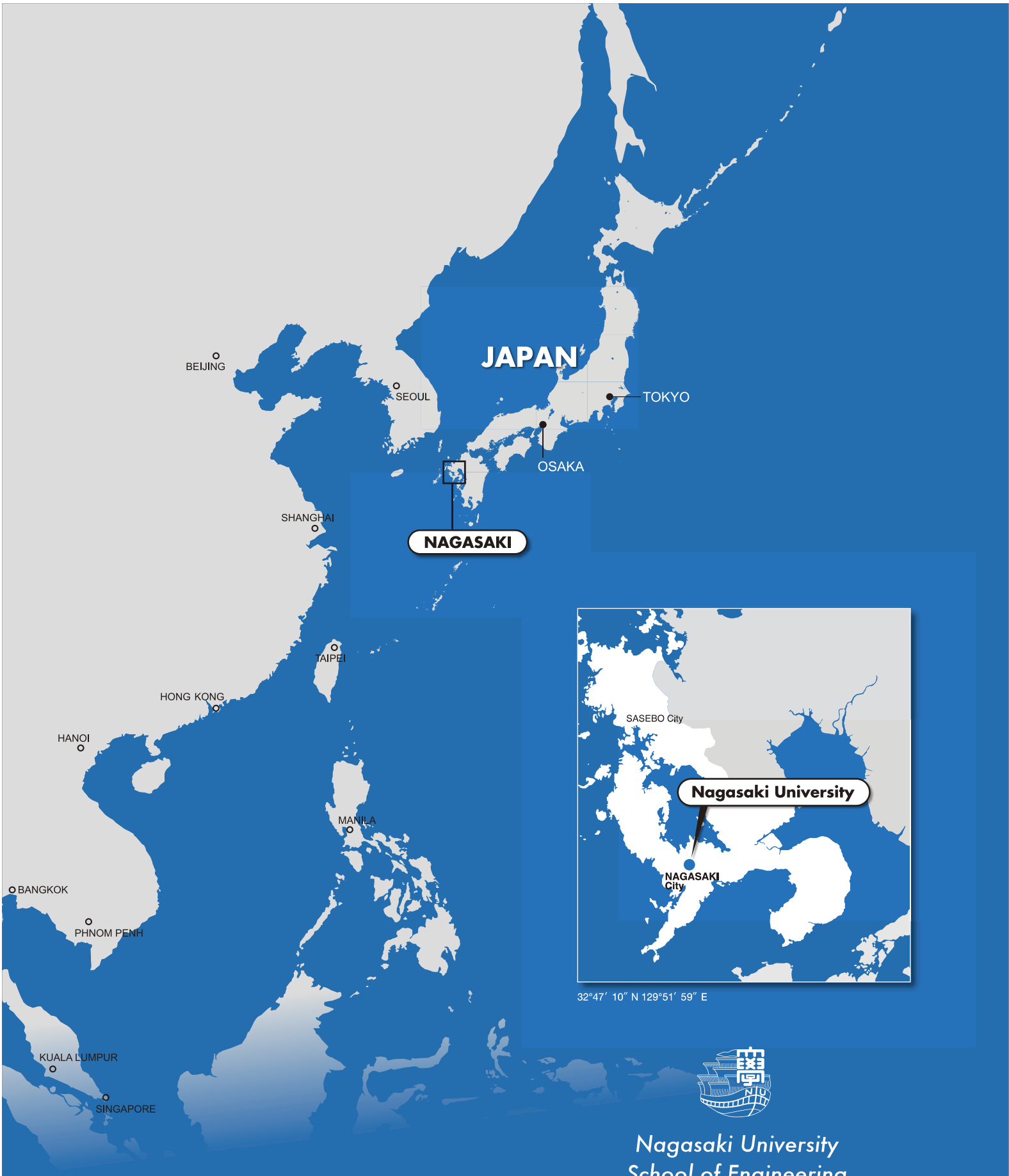
Memorandum of Understanding on Student Exchange Based on Academic Cooperation Agreements

Jeju National University (Korea)	2008.02.28
Fuzhou University (China)	2004.09.21
Tongji University (China)	2004.09.28
Sungkyunkwan University (Korea)	2006.03.28
Shandong University (China)	2010.11.01
Shandong University of Science and Technology (China)	2010.11.01
Chonbuk National University (Korea)	2010.11.01
University of Naples Federico Ⅱ (Italy)	2012.09.21
Universidad Pontificia Comillas (Spain)	2013.07.25
Ho Chi Minh City University of Technology (Vietnam)	2018.08.27
Dalian University of Technology (China)	2018.12.06
National University of Civil Engineering (Vietnam)	2020.01.31
Universita' Politecnica delle Marche (Italy)	2020.06.15
Vietnam National University Ho Chi Minh City - University of Science (Vietnam)	2022.01.01
Shandong University (China)、Sungkyunkwan University (Korea)	2022.03.31

International Students

(As of 1 May, 2022)

Country	School of Engineering			Graduate School of Engineering			Total
	National expenditure	Private expenditure	Total	National expenditure	Private expenditure	Total	
Bhutan	0	0	0	0	1	1	1
Zimbabwe	0	0	0	0	1	1	1
Senegal	0	0	0	0	1	1	1
Egypt	0	0	0	0	1	1	1
Ethiopia	0	0	0	1	0	1	1
Kenya	0	0	0	0	1	1	1
Nigeria	0	0	0	0	1	1	1
Bangladesh	0	0	0	0	1	1	1
Viet Nam	0	0	0	3	6	9	9
Thailand	0	0	0	0	2	2	2
Myanmar	0	0	0	2	1	3	3
Philippines	0	0	0	0	1	1	1
Korea	0	7	7	0	3	3	10
China	0	11	11	0	36	36	47
Mongolia	0	0	0	0	2	2	2
Malaysia	0	1	1	0	1	1	2
Zambia	0	0	0	0	1	1	1
Guinea	0	0	0	0	1	1	1
Indonesia	0	0	0	1	0	1	1
Madagascar	0	0	0	0	1	1	1
Russian Federation	0	0	0	0	1	1	1
Total	0	19	19	7	63	70	89



Nagasaki University
School of Engineering
&
Graduate School of Engineering

1-14 Bunkyo, Nagasaki City, 852-8521 JAPAN
Tel+81-95-819-2489 Fax+81-95-819-2488
Email : eng_soumu@ml.nagasaki-u.ac.jp
URL : http://www.eng.nagasaki-u.ac.jp/english/index.html

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