

Doctoral Program Faculty, Graduate School of Engineering, Kitami Institute of Technology

Co-creative Engineering

Academic Year 2026

Research Fields	Faculty	Research Topics
Mechanical and Electrical Engineering	(Prof.) URA Sharifu	3D Printing, Industry 4.0, Remanufacturing, Sustainable Product Development
	(Prof.) OHNO Tomoya	All solid state Li-ion battery. Ceramis Nano-coating on Nano-particles.
	(Prof.) OKUMURA Takashi	Artificial intelligence in medicine Public health informatics Health crisis management Policy assessment for healthcare information systems
	(Prof.) OBARA Shinya	Distributed power supply, Compound energy system, Optimal design, Operation plan.
	(Prof.) SEGAWA Takehiko	Aerodynamic drag reduction in mobility by active flow control. Plasma-based fluid application technology.
	(Prof.) TAKEYAMA Mayumi	Thin-films for electronics. LSI process engineering. Physics and chemistry for metal/semiconductor interfaces.
	(Prof.) HAYASHIDA Kazuhiro	Improvement of engine combustion technology and engine performance under low temperature conditions.
	(Prof.) HIRAI Shigeto	Development and characterization of electrocatalysts for the activation of next generation energy conversion technologies
	(Prof.) HOSHINO Yohei	Study on vibration analysis and control for higher efficiency mechanical systems and application of robot technology
	(Prof.) MORITA Shinichi	Latent heat storage system, Heat transfer enhancement of fluid including nano-sized dispersoid
	(Prof.) YOSHIDA Yutaka	Evaluation of damage in materials, Study on mechanical properties of biomaterials.
	(Assoc. Prof.) UENISHI Toru	Carbon dioxide capture and recycling technology, Fuel cells, Exhaust gas aftertreatment systems
	(Assoc. Prof.) UMEMURA Atsushi	Design and analysis of wind energy conversion system, Analysis of power system dynamics, Analysis and control of rotating electrical machines. Control of power electronic equipments.
	(Assoc. Prof.) OKUYAMA Yelm	Study on the Microstructure and Mechanical Properties of Metallic Materials Using Computational Mechanics
	(Assoc. Prof.) KAGAYA Katsushi	Cybernetics and biomimetics of organisms as adaptive systems evolved in extreme and real environments
	(Assoc. Prof.) KANEKIYO Yasumasa	Design and synthesis of stimuli-responsive molecular recognition systems.
	(Assoc. Prof.) KAWANO Yoshiki	Development of numerical methods and systems to evaluate mechanical properties in materials and their application to metals and bones
	(Assoc. Prof.) SAKAGAMI Hirotohi	Manufacture of turquoise hydrogen and nanocarbon, Study on effective utilization of underutilized energy resources
	(Assoc. Prof.) SATO Masaru	2.5D/3D LSI process engineering
	(Assoc. Prof.) TAKAI Kazunori	Flow-Induced Vibration, Fluid-Structure Interactions.
(Assoc. Prof.) TAKAHASHI Rion	Design and analysis of wind energy conversion system, Analysis of power system dynamics, Analysis and control of rotating electrical machines.	
(Assoc. Prof.) YASUI Takashi	Numerical analysis and design of optical waveguide devices.	
(Assoc. Prof.) RAVANKAR Abhijeet	Study of autonomous mobile robots, Artificial Intelligence (AI), Deep Learning, Machine Learning, Computer Vision, Robotics & AI in service, automation, and healthcare.	

Research Fields	Faculty	Research Topics
Civil and Environmental Engineering	(Prof.) INOUE Masumi	Study on durability and workability of cold weather concrete.
	(Prof.) KAMEDA Takao	Clarifying the impact of global warming on the Cryosphere (lake ice, snow depth and etc.), research on curling (analysis of trajectory of a curling stone, clarifying the sweeping mechanism), study on the stalagmites in Hyakujoujiki Cave, Hokkaido, Japan
	(Prof.) KAWAGUCHI Takayuki	Study on ground behavior in cold regions and ground reinforcement.
	(Prof.) KIDA Masato	Study on clathrate hydrate-based technologies
	(Prof.) KOMAI Katsuaki	Modeling on water resources management, water pollution, aquatic ecosystem, and blue carbon
	(Prof.) TAKAHASHI Kiyoshi	Evaluation of transportation project.
	(Prof.) CHOI Heesup	Study on behavior prediction and self-healing of cracks in concrete structure.
	(Prof.) TOMIYAMA Kazuya	Human factor-based evaluation of transportation infrastructure
	(Prof.) NAKAMURA Dai	Study on changes in physical properties of rock due to freeze.
	(Prof.) HACHIKUBO Akihiro	Formation processes and thermal properties of snow, ice and gas hydrate.
	(Prof.) MINAMI Hirotsugu	Development of analytical methods for the determination of trace elements in material and environmental samples.
	(Prof.) YOSHIKAWA Yasuhiro	Study on flood control, water-utilization and environment of river in cold regions.
	(Assoc. Prof.) OHNO Hiroshi	Physicochemical properties of ice and gas hydrate
	(Assoc. Prof.) KADOTA Takanori	Performance evaluation of bridge structures
	(Assoc. Prof.) KAWAGUCHI Yusuke	Analysis of the atmosphere–sea ice–ocean coupled system and its impacts on the climate system
	(Assoc. Prof.) SAITO Takehiko	Study on seismic isolation devices and disaster prevention in cold regions.
	(Assoc. Prof.) SHIRAI Hidekazu	Study on waves and current flows in estuarine and constal regions.
	(Assoc. Prof.) SHIRAKAWA Tatsuo	Changes in snow and ice environments associated with climate change and its impact on transport.
	(Assoc. Prof.) TATEYAMA Kazutaka	Study on the ice covered seas environment using satellite and in-situ data.
	(Assoc. Prof.) JEONG ILWON	Study on material cycling and restoration in coastal benthic environments
(Assoc. Prof.) HORI Akira	Environmental conservation and physical properties of ice in cold regions.	
(Assoc. Prof.) WATANABE Tatsuya	Study on periglacial processes and mass movement.	

Research Fields	Faculty	Research Topics
Information and Communication Engineering	(Prof.) KUROKAWA Kenji	Reliability of optical fiber when exposed to high-power light for ultra high capacity optical communication
	(Prof.) XIE WEI	Artificial intelligence, Observer design and Robust control
	(Prof.) SONE Hiroyasu	Optical information processing using optical device.
	(Prof.) HARADA Kenji	Natural optical phenomena and information photonics.
	(Prof.) PTASZYNSKI Michal Edmund	Applications of Data Science, Generative AI, and Natural Language Processing to Real-World Problems (Natural Language Processing, Artificial Intelligence, Affective Computing, Cyberbullying and Online Harms Detection, Revitalization of Endangered Languages)
	(Prof.) MAEDA Yasunari	Knowledge information processing and its applications.
	(Prof.) MASUI Hiroshi	Development of bus location system and data analysis based on public transportation open data, optimization of cloud-based collaboration platform using machine learning, utilization and analysis of academic information databases.
	(Prof.) MASUI Fumito	Natural Language Processing and its application, Curling Informatics and Tourism Informatics.
	(Prof.) Eronen Juuso Kalevi Kristian	Data Science, Natural Language Processing, Cross-lingual transfer learning
	(Assoc. Prof.) KAWAMURA Takeshi	Stability analysis and synthesis for control system, Robotics, Intelligent Transport Systems(ITS), and Forest Engineering.
	(Assoc. Prof.) KIRIHARA Takanobu	Numerical astronomy, Nearby Universe, Formation and evolution of galaxies, Big data analysis for astronomy
	(Assoc. Prof.) SAKAI Daisuke	Holography, Optical property around transparent medium, Display technique for optical information.
	(Assoc. Prof.) SHIBUYA Takatoshi	Extragalactic Astronomy, Observational Astronomy, Early Universe, Big Data Analysis, Digital Image Processing, Research on Distant Galaxies using Artificial Intelligence
	(Assoc. Prof.) SUGISAKA Jun-ichiro	Hybrid artificial intelligence using holograms and computers, design of computer-generated hologram, and application of numerical scattering simulation
	(Assoc. Prof.) TAGUCHI Kenji	Study on biomedical EMC and optimal design of electromagnetic device using numerical simulation
(Assoc. Prof.) TAKEKOSHI Tatsuya	Research on cosmic star formation, and the development of submillimeter instruments and data analysis methods	

Research Fields	Faculty	Research Topics
Applied Chemistry	(Prof.) ABE Shigeaki	Development of novel medical/biomaterials based on organic, inorganic, and composite materials
	(Prof.) ARAI Hirofumi	Suppression of allergy and inflammation by food factors using cell lines.
	(Prof.) OHTSU Naofumi	Development of biofunctional metallic implants for medical application, Analysis of bio/biomaterial interface reaction
	(Prof.) KAWAMURA Midori	Preparation and application of black metal films, Development of ultra-pure metal film deposition process, High-performance thin-film materials utilizing nanolayers
	(Prof.) KIBA Takayuki	Development and characterization of metal/semiconductor nanostructured materials and their application to optical devices
	(Prof.) KIM Kyung Ho	Optoelectronic devices based on nanostructures.
	(Prof.) KONISHI Masaaki	Investigation and application for environmental microorganisms, development of bioprocess.
	(Prof.) MIURA Atsushi	Molecular behavior analysis and crystallization control via optical tweezers–microspectroscopy; Spectroscopic informatics based on spectroscopic measurement, data analysis, and machine learning; and Spectroscopic informatics–based smart agriculture
	(Prof.) MURATA Miki	Synthesis of organoboron and - silicon compounds by transition - metal- catalyzed coupling reactions.
	(Assoc. Prof.) CHIOU Tai-Ying	Analysis and application of food microorganisms, and development of novel fermented food materials.
	(Assoc. Prof.) KOHARI Yoshihito	Synthesis of biologically active compounds using organocatalysts
	(Assoc. Prof.) KONDO Hiroko	Computational biophysics and bioinformatics
	(Assoc. Prof.) SHIMOTORI Yasutaka	Stereoselective synthesis of functional organic compounds and evaluation of their properties.
	(Assoc. Prof.) FENG Chaohui	Development of an innovative meal added with flavonoids extracted from waste citrus peels and quality evaluation by using non-invasive detection
(Assoc. Prof.) MIYAZAKI Kensuke	Development of environmentally friendly polymer materials.	
(Assoc. Prof.) YOKAWA Ken	Bioengineering of plant environmental adaptation and metabolism	

Research Fields	Faculty	Research Topics
Other related Fields	(Prof.) SAWADA Okihiro	Theories of Mathematical Fluid Dynamics
	(Assoc. Prof.) KABAYA Yuichi	Hyperbolic geometry and topology.
	(Assoc. Prof.) SHIBUKAWA Genki	Special functions and Integrable systems
	(Assoc. Prof.) TOYOKAWA Hisayoshi	Ergodic theory
	(Assoc. Prof.) NAKAMURA Fumihiko	Ergodic theory and Random dynamical systems
	(Assoc. Prof.) MATSUDA Kazunori	Commutative ring theory and Combinatorics