

Gunma University Graduate School of Science and Technology (Doctoral Program)
Faculty Members and Fields of Specialization

※Please make sure to receive an approval for acceptance from the supervisor before applying.

※Please put "gunma-u.ac.jp" after the at sign (@).

◆ **Domain of Materials and Bioscience**

Faculty Members	E-mail	Fields of Specialization
Professors		
Naoki Asakawa	asakawa@	<ul style="list-style-type: none"> • Bio-inspired devices using emergent property found in polymers • Development of synthetic organic reactions and their applications • Functional analysis of the liver-enriched nuclear receptors using gene-targeted mice • Development of property and functionality of polymeric materials by drawing techniques • Structure and function of polyester-degrading enzymes, screening of microorganisms involved in the environmental cleanup • Solid state chemistry and design of functional oxides • Search and analysis of functional food ingredients expected to prevent disease and promote health • Development of micro bioanalysis systems • Development of carbon-based nanoporous materials and electrochemical capacitors • Studies on molecular structures of transient species and complexes consisting of radicals • Biomolecular science, Biophysical chemistry of proteins, Biospectroscopy, Bioinformatics • Structural analysis and thermal study of model biomembranes • Functional analysis of receptors, characterization and application of protein self-assembly • Development of biobased and biodegradable polymers • Construction and properties of novel π-conjugated systems including fullerene chemistry and supramolecular chemistry • Studies of organic-inorganic hybrid materials for light energy conversions • Glycoscience, Glycotechnology, Synthetic study of glycoconjugates • Studies on unique ligands with heavier typical elements and their transition metal complexes • Studies on the photophysics and photochemistry of organic compounds and bioimaging using luminescent molecules
Hideki Amii	amii@	
★ Yusuke Inoue	yinoue@	
Hiroki Uehara	hirokiuehara@	
★ Ken-ichi Kasuya	kkasuya@	
Toru Kyomen	tkyomen@	
★ Hideo Satsu	satsu@	
Kiichi Sato	kiichi.sato@	
Soshi Shiraishi	soshishiraishi3@	
Yoshihiro Sumiyoshi	y-sumiyoshi@	
Masashi Sonoyama	sonoyama@	
Hiroshi Takahashi	hirotakahashi@	
* Shigeki Takeda	stakeda@	
★ Yuya Tachibana	tachibana@	
Yosuke Nakamura	nakamura@	
Jun-ichi Fujisawa	jfujisawa@	
Ichiro Matsuo	matsuo@	
Takako Muraoka	takakomuraoka@	
Toshitada Yoshihara	yoshihara@	
Associate Professors		
Shinji Iwamoto	siwamoto@	<ul style="list-style-type: none"> • Solvothermal synthesis of inorganic materials and their performance as catalysts autoantigens, advanced functional foods for prevention of diseases • Synthetic vaccines and diagnosis material; biofunctional chemistry; biomedical and functional polymers • Development of high-performance polymer fiber and film materials and ceramics by green processing • Synthesis of polymeric materials through a combination of computational and experimental chemistry • Design of biomolecular complexes and exploration of biological phenomena through synthetic biology • Synthesis and properties of novel organosilicon compounds using transition-metal complexes • Structure and property of biomembranes and their functions • Physical chemistry and vibrational spectroscopy on molecular aggregation systems transition-metal complexes • Construction and application of functional molecules using peptide and protein engineering • Synthesis of metal complexes bearing new ligands for the purpose of activating small molecules • Self-assembling structure and dynamics of multicomponent polymer systems • Bacterial and mitochondrial stalled-ribosome rescue systems • Operando Studies of Energy Storage Devices Using Synchrotron Radiation • Development of functional oligonucleotides, chemistry of natural products • Photophysics and photochemistry of organic and organometallic compounds • Development of novel bioactive peptides utilizing molecular imaging technique application for bioimaging
Hiroyuki Oku	oku@	
Masaki Kakiage	kakiage@	
Ryohei Kakuchi	kakuchi@	
Koki Kamiya	kamiya@	
Ken-ichiro Kanno	kkanno@	
Masanao Kinoshita	kinoshi@	
Takafumi Shimoaka	shimoaka@	
Tsuyoshi Takahashi	ttakahas@	
Nobuhiro Takeda	ntakeda@	
★ Hiroyuki Takeno	takeno@	
Nobukazu Nameki	nameki@	
Yoshikiyo Hatakeyama	y-htkym@	
Tomohisa Moriguchi	moriguchi@	
* Minoru Yamaji	yamaji@	
Keiichi Yamada	kyamada@	
Visiting Professors		
Noriaki Seko		<ul style="list-style-type: none"> • R&D of the polymer modification technique by radiation processing • Quantum beam reaction and environmental / medical applied research • Nanotechnology Research and Material Development for Application to • Study on Ultra-finefabrication Materials Based on Reaction Induced by Quantum Beam • Synthesis and structure/property analysis for functional polymer materials
Mitumasa Taguchi		
Tetsuya Yamaki		
Hiroki Yamamoto		
Zhao Yue		

* will retire in March, 2028

★will transfer to Graduate School of Food and Population Health Sciences in April, 2027. If the establishment of the doctoral program in the Graduate School of Food and Population Health Sciences is decided in April of the same year.

◆ Domain of Mechanical Science and Technology

Faculty Members	E-mail	Fields of Specialization
Professors		
* Kenji Amagai Mikiya Araki Tsuneaki Ishima	amagai@ mikiya.araki@ ishima@	<ul style="list-style-type: none"> • Thermo-fluid engineering, Interfacial flow, Atomization, Environmental fluid engineering • Jet engines, Jet noise, Combustion, Spray • The experimental elucidation for flow, heat and mass transfer and laser application for flow including small particle
Atsushi Iwasaki Shinji Koyama Ikuo Shohji	aiwasaki@ koyama@ shohji@	<ul style="list-style-type: none"> • Structural health monitoring and composite material • Precision bonding, surface hardening, corrosion resistance, wear resistance • Heterophase interface science, micro joining, electronics packaging materials, brazing, surface treatment and corrosion of metals
Takaaki Suzuki Nobuaki Nakazawa Yoshihiko Hangai Yusaku Fujii Tomohiko Furuhashi Shinichi Maruyama	suzuki.taka@ n.nakazawa@ hanhan@ fujii@ tfuruhashi@ maruyama@	<ul style="list-style-type: none"> • Micromachines and MEMS for bio, optical and IoT applications • Human interface, biomedical motion control, and motion planning for a robot • Fabrication and mechanical evaluation of porous metals • Precision measurement, Optical measurement, Electrical-mechanical measurement • Combustion, spray flow, exhaust gas aftertreatment and gas turbines • Vibration analysis and measurements of machines and structures, Nonlinear phenomenon
* Takao Yamaguchi Ko Yamada Weimin Lin	yamagme3@ yamada@ wlin@	<ul style="list-style-type: none"> • Numerical analysis for dynamics of cars, machines and living bodies, Vibration damping, Sound-proof structure, Acoustic black hole • System control theory and its application, control of machine and robot, and intelligent control of the machine • Developing a high efficiency ultra-precision polishing machine. Research for the application of ELID process. Creating a desktop processing machine and test.
Associate Professors		
Masahiro Inoue	masa-inoue@	<ul style="list-style-type: none"> • Development and characterization of organic/metal/inorganic hybrid materials, and their application to novel electronic systems
Md Abdus Samad Kamal	maskamal@	<ul style="list-style-type: none"> • Control of next generation vehicular traffic system, model predictive control and intelligent control and their applications
Takahiro Kawaguchi Hisanobu Kawashima Yoshio Zama Ryosuke Suzuki Akihiro Takita Yuya Tanaka	kawaguchi@ hkawa@ yzama@ r_suzuki@ takita@ yuya.tanaka@	<ul style="list-style-type: none"> • Control engineering, system identification, state estimation, machine learning • Bubble dynamics, heat and fluid flow measurement, and multiphase flow • Spray flow, Quantitative visualization measurement, Automotive engineering • Smart manufacturing, IoT utilization, Digital communications, Material testing technology • Optical measurement, Image processing, Social safety, IoT devices • Characterization of organic materials and their application to semiconductor and mechatronic devices
Masato Funatsu Iwanori Murakami	mfunatsu@ murakami@	<ul style="list-style-type: none"> • Hypersonic and high-temperature gas dynamics, Thermal protection system for space vehicle, Plasma diagnoses by spectroscopy • Applied electromagnetics, Actuator, Applied of superconducting levitation, Jumping robot
Visiting Professors		
Satoshi Okajima Takashi Wakai Tomoyoshi Watakabe Hirohiko Watanabe		<ul style="list-style-type: none"> • Design evaluation method for fast reactors, Coupling of probabilistic risk assessment and structural reliability evaluation • Structural design and material strength evaluation techniques for Fast Breeder Reactors • Seismic design evaluation techniques for Fast Reactors • Soldering, Evaluation of microstructure, Bonding materials for high-temperature power electronics

* will retire in March, 2028

◆ Domain of Environmental Engineering Science

Faculty Members	E-mail	Fields of Specialization
Professors Takuya Inoue *★ Hideyuki Itabashi Mitsuo Ozawa Masanobu Kanai Kazuyoshi Sato Yoshinao Nakagawa Hideyuki Morimoto Akihiko Wakai Tomohide Watanabe	inouetakuya@ itabashi@ ozawa@ kanai@ kazuyoshi-sato@ yoshi.nakagawa@ hmorimoto@ wakai@ watanabe@	<ul style="list-style-type: none"> • Experimental and numerical studies on flood, evacuation, and river morphodynamics • Speciation and removal of heavy metal ions in the environment • Fire resistance of concrete, Control of cracking due to volume change in concrete at early age • Local disaster prevention, evacuation, disaster information, disaster education • Synthesis and processing of ceramic materials and application for energy and environmental devices • Development of catalytic reaction systems for conversion of non-petroleum resources to useful substances • Development of all-solid-state batteries and novel battery materials • Slope failure mechanisms, soil-structure interaction and their numerical simulation • Biological wastewater treatment, advanced microbial and physicochemical degradation of pollutants in water / wastewater, and microbial electrochemical technology
Associate Professors Takafumi Ishii Tsukasa Ito Ken-ichi Uzaki ★ Masahiko Oshige Naokatsu Kannari ★ Daisuke Kozaki Fei Cai ★ Yuta Sugiyama ★ Takanori Tanino Reiji Noda ★ Miyabi Hiyama Junpei Fujiki	ishii@ t.ito@ k-uzaki@ oshige@ nkannari@ daisuke.2-10@ feicai@ sugiyama.yuta@ ttanino@ noda_r@ miyabi@ jun.fujiki@	<ul style="list-style-type: none"> • Development of surface analysis techniques for carbon materials, application of carbon materials to material conversion catalysts and energy devices • Water treatment, environmental microbiology and biodegradation of environmental pollutants • A study of regional sediment transport from rivers to coastal regions. Development of the calculation model to estimate the sediment discharge of river by using the simple model and field data. • Development of bio-molecular manipulation methods and application of reaction process analysis by using molecule design techniques • Development of heterogeneous catalysts for energy and chemical conversion • Development of various analytical methods and materials with their application in food, environment, and agriculture fields • Earthquake-resistant measures for ground and earth structures, safety evaluation of landslides, and shallow ground thermal energy utilization • Elucidation of the mechanisms underlying the metabolism of dietary compounds by gut bacteria at the genetic level • Development of electrostatic-based food processing processes • Development and evaluation of waste/biomass energy utilization processes, Evaluation and design of a local society based on energy/mass flow analysis • Application of electrostatics on bio-separation and micro-chemical systems, development of bio-micro-electromechanical systems • Development of functionalized porous materials, analysis and modeling of adsorption properties, and application to adsorption processes
Visiting Professors Kenji Tanno Naoki Noda Katsuhiro Nomura		<ul style="list-style-type: none"> • Numerical combustion simulation, Energy control • Environmental combustion engineering, aerosol engineering, energy conversion of coal and biomass • Research on crystal structures and structure–property relationships in inorganic materials

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◆ Domain of Electronics and Informatics, Mathematics and Physics

Faculty Members	E-mail	Fields of Specialization
Professors ◎ Kazuyuki Amano You Yin ◎ Hiromasa Oku Syun-ji Ozaki ◎ Tsuyoshi Kato Tamihito Gotoh Hiroshi Sakurai ◎ Kaoru Shimada ◎ Koji Jimura Hayato Sone Toshiki Takahashi Manabu Takahashi ◎* Shin-ichi Nakano Tatsuya Nagao Seiji Hashimoto Toshiya Hikihara Kenta Miura Takashi Miwa * Kuniyuki Motojima Masakazu Yamamoto Yasushi Yuminaka	amano@ yinyou@ h.oku@ shunji@ katotsu.cs@ tgotoh@ sakuraih@ k.shimada@ jimura@ hayatosone@ t-tak@ mtakahas@ nakano@ nagao@ hashimotos@ hikihara@ mkenta@ miwa@ motojima@ mk-yamamoto@ yuminaka@	<ul style="list-style-type: none"> • Computational complexity, theory of algorithms, machine learning • Materials and devices for brain-like chip and information storage, nanofabrication, nanometrology • Dynamic image control, High-speed image processing, High-speed optical devices • The optical properties and electronic energy-band structures of nanostructured semiconductors and ternary compound semiconductors • Bioinformatics, machine learning, and statistical analysis • Material science for optical devices • Spintronics, Lithium ion battery, X-ray imaging, medical engineering • Evolutionary computation, knowledge discovery and data mining • Human cognitive neuroscience, neuroinformatics, and decision neuroscience • Nanometer measurement and fabrication, nanoelectronic devices, high-sensitive biosensor for medical use, crystal growth • Physics of compact torus plasmas for thermonuclear fusion reactors • Theoretical study on electronic properties and magnetism in transition metal compounds • Graph algorithm, and Information visualization, optimization • Theory of strongly correlated electron system • Motion control, system identification, vibration control, precision control, renewable energy • Low-dimensional strongly correlated electron systems, quantum spin systems, numerical calculation • Light-emitting materials and devices, Photoelectric devices • Nondestructive evaluation using doppler radar, forced vibration and electromagnetics • Radio wave propagation, Wireless measurement, Electromagnetic wave simulation • Nonlinear partial differential equations, Mathematical model of diffusion phenomena, Time evolution of nonlinear diffusion • Multiple-valued logic and new-paradigm analog/digital integrated circuits
Associate Professors ◎ Toru Araki ◎ Kenichi Kawanishi Ren Koda Kosuke Suzuki Yuki Tanaka Akito Chiba Hui Zhang Hirofumi Nagoshi Takafumi Miyazaki	arakit@ kawanisi@ koda@ kosuzuki@ ytanaka@ chiba@ huizhang@ nagoshi@ tmiyazaki@	<ul style="list-style-type: none"> • Graph theory, Graph algorithm, Combinatorial optimization • Information and communication systems, performance evaluation, queueing theory • Medical ultrasound imaging, Tissue elasticity measurement, Wave propagation, Micro/nano-bubble treatment • X-ray characterization, Backscatter imaging, Electronic structure, Functional oxide, Lithium rechargeable battery • High-speed arithmetic algorithm, IoT device and its management system, graph theory • Photonics, Optoelectronics • Nano-fabrication and measurement, nanoelectronic device, ultra-sensitive biosensor, and simulation • Analytic number theory, value-distribution of arithmetic functions • Exponential Diophantine equation, Diophantine analysis
Visiting Professors Tomio Iwasaki Teruo Kohashi Kazuo Saito Ken Harada Naoki Kawachi Mitsutaka Yamaguchi	 m-yamaguchi@	<ul style="list-style-type: none"> • Sustainable and bio-compatible materials design with molecular simulations and materials informatics • Magnetic metrology, Spin polarized scanning electron microscopy • Advanced electronic engineering • Electron microscopy, electron interferometry, electron holography, and their physical applications • Research utilizing radioisotope imaging technologies to address challenges in agriculture, medicine, and the environment • Development of radioisotope (RI) imaging technologies in the field of life sciences

* will retire in March, 2028

◎will transfer to Graduate School of Informatics in April, 2027

◆ Gunma University Initiative for Advanced Research (GIAR)

Faculty Members	E-mail	Fields of Specialization
Professor Keisuke Nimura Md. Zakir Hossain	nimura@ zakir@	<ul style="list-style-type: none"> • Gene expression, Gene Therapy, Oncotherapy, DNA barcode, Next Generation Sequencing • Chemical modification of epitaxial graphene on SiC substrate
Assistant Professor Takehiko Yokobori	bori45@	<ul style="list-style-type: none"> • Biomarker research using clinical cancer specimens, Development of cancer treatment tools