

**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
<b>Professors</b>		
Naoki Asakawa	asakawa@	<ul style="list-style-type: none"> <li>• Bio-inspired devices using emergent property found in polymers</li> <li>• Photophysics and design of photofunctional composite molecular systems including coordination compounds</li> </ul>
Motoko S. Asano	motoko@	
Hideki Amii	amii@	<ul style="list-style-type: none"> <li>• Development of synthetic organic reactions and their applications</li> <li>• Functional analysis of the liver-enriched nuclear receptors using gene-targeted mice</li> </ul>
Yusuke Inoue	yinoue@	
Hiroki Uehara	hirokiuehara@	<ul style="list-style-type: none"> <li>• Development of property and functionality of polymeric materials by drawing techniques</li> <li>• Organosilicon and organic heteroatom chemistry: molecular design, synthesis, and application</li> </ul>
* Masafumi Unno	unno@	
Md. Zakir Hossain	zakir@	<ul style="list-style-type: none"> <li>• Chemical modification of epitaxial graphene on SiC substrate</li> <li>• Physical chemistry, photochemistry and crystal growth</li> </ul>
Tetsuo Okutsu	okutsu@	
Hiroaki Ozaki	h-ozaki@	<ul style="list-style-type: none"> <li>• Development of modified nucleic acids and its application</li> <li>• Structure and function of polyester-degrading enzymes, screening of microorganisms involved in the environmental cleanup</li> </ul>
Ken-ichi Kasuya	kkasuya@	
Toru Kyomen	tkyomen@	<ul style="list-style-type: none"> <li>• Solid state chemistry and design of functional oxides</li> <li>• Development of micro bioanalysis systems</li> </ul>
Kiichi Sato	kiichi.sato@	
Soshi Shiraishi	soshishiraishi3@	<ul style="list-style-type: none"> <li>• Development of carbon-based nanoporous materials and electrochemical capacitors</li> <li>• Studies on molecular structures of transient species and complexes consisting of radicals</li> </ul>
Yoshihiro Sumiyoshi	y-sumiyoshi@	
Masashi Sonoyama	sonoyama@	<ul style="list-style-type: none"> <li>• Biomolecular science, Biophysical chemistry of proteins, Biospectroscopy, Bioinformatics</li> <li>• Structural analysis and thermal study of model biomembranes</li> </ul>
Hiroshi Takahashi	hirotakahashi@	
Shigeki Takeda	stakeda@	<ul style="list-style-type: none"> <li>• Functional analysis of receptors, characterization and application of protein self-assembly</li> <li>• Construction and properties of novel <math>\pi</math>-conjugated systems including fullerene chemistry and supramolecular chemistry</li> </ul>
Yosuke Nakamura	nakamura@	
Minoru Hanaya	mhanaya@	<ul style="list-style-type: none"> <li>• Development and characterization of functional solid-state materials</li> <li>• Studies of organic-inorganic hybrid materials for light energy conversions</li> </ul>
Jun-ichi Fujisawa	jfujisawa@	
Ichiro Matsuo	matsuo@	<ul style="list-style-type: none"> <li>• Glycoscience, Glycotechnology, Synthetic study of glycoconjugates</li> <li>• Studies on unique ligands with heavier typical elements and their transition metal complexes</li> </ul>
Takako Muraoka	takakomuraoka@	
<b>Associate Professors</b>		
Shinji Iwamoto	siwamoto@	<ul style="list-style-type: none"> <li>• Solvothermal synthesis of inorganic materials and their performance as catalysts autoantigens, advanced functional foods for prevention of diseases</li> <li>• Synthetic vaccines and diagnosis material; biofunctional chemistry; biomedical and functional polymers</li> </ul>
Hiroyuki Oku	oku@	
Masaki Kakiage	kakiage@	<ul style="list-style-type: none"> <li>• Development of high-performance polymer fiber and film materials and ceramics by green processing</li> <li>• Synthesis of polymeric materials through a combination of computational and experimental chemistry</li> </ul>
Ryohei Kakuchi	kakuchi@	
Ken-ichiro Kanno	kkanno@	<ul style="list-style-type: none"> <li>• Synthesis and properties of novel organosilicon compounds using transition-metal complexes</li> <li>• Physical chemistry and vibrational spectroscopy on molecular aggregation systems</li> </ul>
Takafumi Shimoaka	shimoaka@	
Tsuyoshi Takahashi	ttakahas@	<ul style="list-style-type: none"> <li>• Construction and application of functional molecules using peptide and protein engineering</li> <li>• Synthesis of metal complexes bearing new ligands for the purpose of activating small molecules</li> </ul>
Nobuhiro Takeda	ntakeda@	
Hiroyuki Takeno	takeno@	<ul style="list-style-type: none"> <li>• Self-assembling structure and dynamics of multicomponent polymer systems</li> <li>• Development of biobased and biodegradable polymers</li> </ul>
Yuya Tachibana	tachibana@	
Nobukazu Nameki	nameki@	<ul style="list-style-type: none"> <li>• Analyses of novel translation regulation mechanisms, and structural bioinformatics</li> <li>• Development of functional oligonucleotides, chemistry of natural products</li> </ul>
Tomohisa Moriguchi	moriguchi@	
Minoru Yamaji	yamaji@	<ul style="list-style-type: none"> <li>• Photophysics and photochemistry of organic and organometallic compounds</li> <li>• Development of novel bioactive peptides utilizing molecular imaging technique</li> </ul>
Keiichi Yamada	kyamada@	
Toshitada Yoshihara	yoshihara@	<ul style="list-style-type: none"> <li>• Photophysical and photochemical studies of aromatic compounds and its application for bioimaging</li> <li>• Transition metal-catalyzed polymerization, Synthesis of polymers from unutilized resources</li> </ul>
* Masaru Yoneyama	m.yoneyama@	
<b>Visiting Professors</b>		
Hideki Abe		<ul style="list-style-type: none"> <li>• Studies on molecular and material design of polymers from biomass organic chemicals</li> <li>• Creation of new functional molecules utilizing main group elements</li> <li>• R &amp; D of the polymer modification technique by radiation processing</li> <li>• Quantum beam reaction and environmental / medical applied research</li> <li>• Studies on structure-function relationship of spider dragline silk and artificial silk materials</li> </ul>
Takayuki Kawashima		
Noriaki Seko		
Mitumasa Taguchi		
Keiji Numata		

Yasunari Maekawa Tetsuya Yamaki Hiroki Yamamoto	<ul style="list-style-type: none"> <li>• Synthesis and structure/property analysis for polymer functional materials</li> <li>• Nanotechnology Research and Material Development for Application to Next-Generation Energy Devices</li> <li>• Study on Ultra-finefabrication Matterials Based on Reaction Induced by Quantum Beam</li> </ul>
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\* will retire in March, 2026

◆Domain of Mechanical Science and Technology

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

◆Domain of Environmental Engineering Science

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Hideyuki Itabashi Jun-ichi Ozaki Mitsuo Ozawa Shinji Katsura Masanobu Kanai Nobuyoshi Nakagawa Hideyuki Morimoto Akihiko Wakai Tomohide Watanabe	itabashi@ jozaki@ ozawa@ katsura@ kanai@ nob.nakagawa@ hmorimoto@ wakai@ watanabe@	<ul style="list-style-type: none"> <li>• Speciation and removal of heavy metal ions in the environment</li> <li>• Design and preparation of catalytic carbon materials, particularly used in the applications of fuel cell and biomass conversion.</li> <li>• Fire resistance of concrete, Control of cracking due to volume change in concrete at early age</li> <li>• Development of manipulation technologies for biological molecules and their industry applications</li> <li>• Local disaster prevention, evacuation, disaster information, disaster education</li> <li>• Development of an efficient liquid fuel cell by means of catalyst preparation and by optimizing the electrode structure.</li> <li>• Development of all-solid-state batteries and novel battery materials</li> <li>• Slope failure mechanisms, soil-structure interaction and their numerical simulation</li> <li>• Biological wastewater treatment, microbial and physicochemical degradation of water pollutants, Advanced water / wastewater treatment , resource recovery</li> </ul>
<b>Associate Professors</b> Takafumi Ishii Tsukasa Ito Ken-ichi Uzaki Masahiko Oshige Fei Cai Takahiro Saitoh Kazuyoshi Sato Reiji Noda Miyabi Hiyama	ishii@ t.ito@ k-uzaki@ oshige@ feicai@ t-saitoh@ kazuyoshi-sato@ noda_r@ miyabi@	<ul style="list-style-type: none"> <li>• Development of surface analysis techniques for carbon materials, application of carbon materials to material conversion catalysts and energy devices</li> <li>• Water treatment, environmental microbiology and biodegradation of environmental pollutants</li> <li>• 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.</li> <li>• Development of bio-molecular manipulation methods and application of reaction process analysis by using molecule design techniques</li> <li>• Earthquake-resistant measures for ground and earth structures, safety evaluation of landslides, and shallow ground thermal energy utilization</li> <li>• Applied mechanics, computational mechanics and non-destructive evaluation for civil engineering structures</li> <li>• Synthesis and processing of ceramic materials and application for energy and environmental devices</li> <li>• Development and evaluation of waste/biomass energy utilization processes, Evaluation and design of a local society based on energy/mass flow analysis</li> <li>• Application of electrostatics on bio-separation and micro-chemical systems, development of bio-micro-electromechanical systems</li> </ul>
<b>Visiting Professors</b> Hiromi Shirai Kenji Tanno Naoki Noda		<ul style="list-style-type: none"> <li>• Environmental combustion engineering, clean energy conversion engineering</li> <li>• Numerical combustion simulation, Energy control</li> <li>• Environmental combustion engineering, aerosol engineering, energy conversion of coal and biomass</li> </ul>

◆Domain of Electronics and Informatics, Mathematics and Physics

Faculty Members	E-mail	Fields of Specialization
Professors		
Kazuyuki Amano	amano@	• Computational complexity, theory of algorithms, machine learning
You Yin	yinyou@	• Materials and devices for brain-like chip and information storage, nanofabrication, nanometrology
Hiromasa Oku	h.oku@	• Dynamic image control, High-speed image processing, High-speed optical devices
Syun-ji Ozaki	shunji@	• The optical properties and electronic energy-band structures of nanostructured semiconductors and ternary compound semiconductors
Tsuyoshi Kato	katotsu.cs@	• Bioinformatics, machine learning, and statistical analysis
Tamihiro Gotoh	tgotoh@	• Material science for optical devices
Hiroshi Sakurai	sakurahi@	• Spintronics, Lithium ion battery, X-ray imaging, medical engineering
Kaoru Shimada	k.shimada@	• Evolutionary computation, knowledge discovery and data mining
Koji Jimura	jimura@	• Human cognitive neuroscience, neuroinformatics, and decision neuroscience
Hayato Sone	hayatosone@	• Nanometer measurement and fabrication, nanoelectronic devices, high-sensitive biosensor for medical use, crystal growth
Manabu Takahashi	mtakahas@	• Theoretical study on electronic properties and magnetism in transition metal compounds
Kazumi Tanuma	tanuma@	• Elasticity equations, inverse problems
Shin-ichi Nakano	nakano@	• Graph algorithm, and Information visualization, optimization
Tatsuya Nagao	nagao@	• Theory of strongly correlated electron system
Seiji Hashimoto	hashimotos@	• Motion control, system identification, vibration control, precision control, renewable energy
* Osamu Hanaizumi	hana@	• Devices for optical communication, Microphotonics
Takashi Miwa	miwa@	• Applied measurement for electromagnetic and ultrasonic wave
Kuniyuki Motojima	motojima@	• Radio wave propagation, Wireless measurement, Electromagnetic wave simulation
Yasushi Yuminaka	yuminaka@	• Multiple-valued logic and new-paradigm analog/digital integrated circuits
Associate Professors		
Toru Araki	arakit@	• Graph theory, Graph algorithm, Combinatorial optimization
Ken-ichi Kawanishi	kawanisi@	• Information and communication systems, performance evaluation, queueing theory
Nobuyuki Kurita	nkurita@	• Magnetic bearing, maglev motor, automatic control engineering, power electronics
Kosuke Suzuki	kosuzuki@	• X-ray characterization, Backscatter imaging, Electronic structure, Functional oxide, Lithium rechargeable battery
Masako Suzuki-Sakamaki	masakoss@	• Synchrotron Science, Surface/Interface Science, Multiferroics
Toshiki Takahashi	t-tak@	• Physics of compact torus plasmas for thermonuclear fusion reactors
* Yoshitaka Takahashi	taka@	• Optoelectronics and quantum electronics
Yuki Tanaka	ytanaka@	• High-speed arithmetic algorithm, IoT device and its management system, graph theory
Akito Chiba	chiba@	• Photonics, Optoelectronics
Hirofumi Nagoshi	nagoshi@	• Analytic number theory, value-distribution of arithmetic functions
Toshiya Hikihara	hikihara@	• Low-dimensional strongly correlated electron systems, quantum spin systems, numerical calculation
Kenta Miura	mkenta@	• Light-emitting materials and devices, Photoelectric devices
Takafumi Miyazaki	tmiyazaki@	• Exponential Diophantine equation, Diophantine analysis
Yoshifumi Morita	morita@	• Theoretical study on low dimensional quantum systems and superconductors
Visiting Professors		
Tomio Iwasaki		• Sustainable and bio-compatible materials design with molecular simulations and materials informatics
Teruo Kohashi		• Magnetic metrology, Spin polarized scanning electron microscopy
Kazuo Saito		• Advanced electronic engineering
Nobukazu Takai		• CMOS analog integrated circuit design and its automated design algorithm.
Ken Harada		• Electron microscopy, electron interferometry, electron holography, and their physical applications

\* will retire in March, 2026

◆Gunma University Initiative for Advanced Research (GIAR)

Faculty Members	E-mail	Fields of Specialization
Professor		
Keisuke Nimura	nimura@	• Gene expression, Gene Therapy, Oncotherapy, DNA barcode, Next Generation Sequencing
Associate Professor		
Takehiko Yokobori	bori45@	• Biomarker research using clinical cancer specimens, Development of cancer treatment tools