

## Gunma University Graduate School of Science and Technology (Master's 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 (@).

### ◆Program of Applied Chemistry

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Hideki Amii Kiichi Sato Yoshihiro Sumiyoshi Masashi Sonoyama Hiroshi Takahashi * Shigeki Takeda Yosuke Nakamura  Junichi Fujisawa Ichiro Matsuo Takako Muraoka Toshitada Yoshihara	amii@ kiichi.sato@ y-sumiyoshi@ sonoyama@ hirotakahashi@ stakeda@ nakamura@  jfujisawa@ matsuo@ takakomuraoka@ yoshihara@	<ul style="list-style-type: none"> <li>• Development of synthetic organic reactions and their applications</li> <li>• Development of micro bioanalysis systems</li> <li>• Studies on molecular structures of transient species and complexes consisting of radicals</li> <li>• Biomolecular science, Biophysical chemistry of proteins, Biospectroscopy, Bioinformatics</li> <li>• Structural analysis and thermal study of model biomembranes</li> <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> <li>• Studies of organic-inorganic hybrid materials for light energy conversions</li> <li>• Glycoscience, Glycotechnology, Synthetic study of glycoconjugates</li> <li>• Studies on unique ligands with heavier typical elements and their transition metal complexes</li> <li>• Studies on the photophysics and photochemistry of organic compounds and bioimaging using luminescent molecules</li> </ul>
<b>Associate Professors</b> Koki Kamiya Ken-ichiro Kanno  Masanao Kinoshita Takafumi Shimoaka Tsuyoshi Takahashi Hiroyuki Takeda Yuya Domoto Nobukazu Nameki Tomohisa Moriguchi * Minoru Yamaji Keiichi Yamada	kamiya@ kkanno@  kinoshi@ shimoaka@ ttakahas@ takedah@ domoto@ nameki@ moriguchi@ yamaji@ kyamada@	<ul style="list-style-type: none"> <li>• Design of biomolecular complexes and exploration of biological phenomena through synthetic biology</li> <li>• Synthesis and properties of novel organosilicon compounds using transition-metal complexes</li> <li>• Structure and property of biomembranes and their functions</li> <li>• Physical chemistry and vibrational spectroscopy on molecular aggregation systems</li> <li>• Construction and application of functional molecules using peptide and protein engineering</li> <li>• Functionalization of First Transition Metal Complexes Intending Artificial Photosynthesis</li> <li>• Development of self-assembled large molecules with higher molecular complexity</li> <li>• Bacterial and mitochondrial stalled-ribosome rescue systems</li> <li>• Development of functional oligonucleotides, chemistry of natural products</li> <li>• Photophysics and photochemistry of organic and organometallic compounds</li> <li>• Development of novel bioactive peptides utilizing molecular imaging technique application for bioimaging</li> </ul>

\* will retire in March, 2028

◆Program of Materials Science

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Naoki Asakawa Hiroki Uehara Toru Kyomen Shinji Koyama Ikuo Shohji  Soshi Shiraishi	asakawa@ hirokiuehara@ tkyomen@ koyama@ shohji@  soshishiraishi3@	<ul style="list-style-type: none"> <li>• Bio-inspired devices using emergent property found in polymers</li> <li>• Development of property and functionality of polymeric materials by drawing techniques</li> <li>• Solid state chemistry and design of functional oxides</li> <li>• Precision bonding, surface hardening, corrosion resistance, wear resistance</li> <li>• Heterophase interface science, micro joining, electronics packaging materials, brazing, surface treatment and corrosion of metals</li> <li>• Development of carbon-based nanoporous materials and electrochemical capacitors</li> </ul>
<b>Associate Professors</b> Masahiro Inoue  Shinji Iwamoto  Hiroyuki Oku  Masaki Kakiage Ryohei Kakuchi Nobuhiro Takeda  Yoshikiyo Hatakeyama	masa-inoue@  siwamoto@  oku@  kakiage@ kakuchi@ ntakeda@  y-htkym@	<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>• 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> <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> <li>• Synthesis of metal complexes bearing new ligands for the purpose of activating small molecules</li> <li>• Operando Studies of Energy Storage Devices Using Synchrotron Radiation</li> </ul>
<b>Visiting Professors</b> Noriaki Seko Mitsumasa Taguchi Tetsuya Yamaki  Hiroki Yamamoto Zhao Yue Hirohiko Watanabe		<ul style="list-style-type: none"> <li>• R &amp; D of the polymer modification technique by radiation processing</li> <li>• Quantum beam reaction and environmental / medical applied research</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> <li>• Synthesis and structure/property analysis for functional polymer materials</li> <li>• Soldering, Evaluation of microstructure, Bonding materials for high-temperature power electronics</li> </ul>
<b>Visiting Associate Professors</b> Akihiro Hiroki		<ul style="list-style-type: none"> <li>• Radiation modification technologies for environment-friendly polymer materials</li> </ul>

◆Program of Chemical Engineering

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Kazuyoshi Sato  Yoshinao Nakagawa  Hideyuki Morimoto	kazuyoshi-sato@  yoshi.nakagawa@  hmorimoto@	<ul style="list-style-type: none"> <li>• Synthesis and processing of ceramic materials and application for enegy and environmental devices</li> <li>• Development of catalytic reaction systems for conversion of non- petroleum resources to useful substances</li> <li>• Development of all-solid-state batteries and novel battery materials</li> </ul>
<b>Associate Professors</b> Takafumi Ishii  Naokatsu Kannari Reiji Noda  Junpei Fujiki	ishii@  nkannari@ noda_r@  jun.fujiki@	<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>• Development of heterogeneous catalysts for energy and chemical conversion</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>• Development of functionalized porous materials, analysis and modeling of adsorption properties, and application to adsorption processes</li> </ul>
<b>Visiting Professors</b> Kenji Tanno Naoki Noda  Katsuhiro Nomura		<ul style="list-style-type: none"> <li>• Numerical combustion simulation, Energy control</li> <li>• Environmental combustion engineering, aerosol engineering, energy conversion of coal and biomass</li> <li>• Research on crystal structures and structure–property relationships in inorganic materials</li> </ul>
<b>Visiting Associat Professors</b> Hiroyuki Akiho		<ul style="list-style-type: none"> <li>• Environmental remediation, Energy conversion engineering</li> </ul>

◆Program of Civil and Environmental Engineering

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Takuya Inoue Mitsuo Ozawa  Masanobu Kanai Akihiko Wakai Tomohide Watanabe	inouetakuya@ ozawa@  kanai@ wakai@ watanabe@	<ul style="list-style-type: none"> <li>Experimental and numerical studies on flood, evacuation, and river morphodynamics</li> <li>Fire resistance of concrete, Control of cracking due to volume change in concrete at early age</li> <li>Local disaster prevention, evacuation, disaster information, disaster education</li> <li>Slope failure mechanisms, soil-structure interaction and their numerical simulation</li> <li>Biological wastewater treatment, advanced microbial and physicochemical degradation of pollutants in water / wastewater, and microbial electrochemical technology</li> </ul>
<b>Associate Professors</b> Tsukasa Ito Ken-ichi Uzaki  Fei Cai	t.ito@ k-uzaki@  feicai@	<ul style="list-style-type: none"> <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>Earthquake-resistant measures for ground and earth structures, safety evaluation of landslides, and shallow ground thermal energy utilization</li> </ul>

◆Program of Mechanical Engineering

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> * Kenji Amagai Mikiya Araki Tsuneaki Ishima  Atsushi Iwasaki Yoshihiko Hangai Yusaku Fujii Tomohiko Furuhashi Weimin Lin	amagai@ mikiya.araki@ ishima@  aiwasaki@ hanhan@ fujii@ tfuruhashi@ 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>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>Developing a high efficiency ultra-precision polishing machine. Research for the application of ELID process. Creating a desktop processing machine and test.</li> </ul>
<b>Associate Professors</b> Tomoyasu Aihara  Hisanobu Kawashima Gonzalez Palencia Juan Carlos Yoshio Zama Ryosuke Suzuki Akihiro Takita Masato Funatsu	t.aihara@  hkawa@ gonzalez@ yzama@ r_suzuki@ takita@ mfunatsu@	<ul style="list-style-type: none"> <li>Microscopic evaluation of metal strength and destruction , and character of fluid bysimulation</li> <li>Bubble dynamics, heat and fluid flow measurement, and multiphase flow</li> <li>Sustainable Energy Systems Design Using Energy-Economics Models</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>Hypersonic and high-temperature gas dynamics, Thermal protection system for space vehicle, Plasma diagnoses by spectroscopy</li> </ul>
<b>Visiting Professors</b> Satoshi Okajima  Takashi Wakai Tomoyoshi Watakabe		<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> </ul>

\* will retire in March, 2028

◆Program of Intelligence and Control Engineering

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> Takaaki Suzuki Hayato Sone  Nobuaki Nakazawa Seiji Hashimoto Shinichi Maruyama Takashi Miwa * Takao Yamaguchi  Ko Yamada	suzuki.taka@ hayatosone@  n.nakazawa@ hashimotos@ maruyama@ miwa@ yamagme3@  yamada@	<ul style="list-style-type: none"> <li>• Micromachines and MEMS for bio, optical and IoT applications</li> <li>• Nanometer measurement and fabrication, nanoelectronic devices, high-sensitive biosensor for medical use, crystal growth</li> <li>• Human interface, biomedical motion control, and motion planning for a robot</li> <li>• Motion control, system identification, vibration control, precision control, renewable energy</li> <li>• Vibration analysis and measurements of machines and structures, Nonlinear phenomenon</li> <li>• Nondestructive evaluation using doppler radar, forced vibration and electromagnetics</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> </ul>
<b>Associate Professors</b> Md Abdus Samad Kamal Takahiro Kawaguchi  Yuya Tanaka  Akito Chiba Hui Zhang Iwanori Murakami	maskamal@ kawaguchi@  yuya.tanaka@  chiba@ huizhang@ murakami@	<ul style="list-style-type: none"> <li>• Control of next generation vehicular traffic system, model predictive control</li> <li>• Control engineering, system identification, state estimation, machine learning and intelligent control and their applications</li> <li>• Characterization of organic materials and their application to semiconductor and mechatronic devices</li> <li>• Photonics, Optoelectronics</li> <li>• Nano-fabrication and measurement, nanoelectronic device, ultra-sensitive biosensor, and simulation</li> <li>• Applied electromagnetics, Actuator, Applied of superconducting levitation, Jumping robot</li> </ul>
<b>Visiting Professors</b> Tomio Iwasaki Teruo Kohashi Kazuo Saito Ken Harada		<ul style="list-style-type: none"> <li>• Sustainable and bio-compatible materials design with molecular simulations and materials informatics</li> <li>• Magnetic metrology, Spin polarized scanning electron microscopy</li> <li>• Advanced electronic engineering</li> <li>• Electron microscopy, electron interferometry, electron holography, and their physical applications</li> </ul>

\* will retire in March, 2028

◆Program of Electronics, Information and Communication Engineering

Faculty Members	E-mail	Fields of Specialization
<b>Professors</b> You Yin Syunji Ozaki  Tamihiro Gotoh Hiroshi Sakurai Toshiki Takahashi Manabu Takahashi Tatsuya Nagao Toshiya Hikihara  Kenta Miura * Kuniyuki Motojima Masakazu Yamamoto Yasushi Yuminaka	yinyou@ shunji@  tgotoh@ sakuraih@ t-tak@ mtakahas@ nagao@ hikihara@  mkenta@ motojima@ mk-yamamoto@ yuminaka@	<ul style="list-style-type: none"> <li>• Materials and devices for brain-like chip and information storage, nanofabrication, nanometrology</li> <li>• The optical properties and electronic energy-band structures of nanostructured semiconductors and ternary compound semiconductors</li> <li>• Material science for optical devices</li> <li>• Spintronics, Lithium ion battery, X-ray imaging, medical engineering</li> <li>• Physics of compact torus plasmas for thermonuclear fusion reactors</li> <li>• Theoretical study on electronic properties and magnetism in transition metal compounds</li> <li>• Theory of strongly correlated electron system</li> <li>• Low-dimensional strongly correlated electron systems, quantum spin systems, numerical calculation</li> <li>• Light-emitting materials and devices, Photoelectric devices</li> <li>• Radio wave propagation, Wireless measurement, Electromagnetic wave simulation</li> <li>• Nonlinear partial differential equations, Mathematical model of diffusion phenomena,</li> <li>• Multiple-valued logic and new-paradigm analog/digital integrated circuits</li> </ul>
<b>Associate Professors</b> Eom Junyong Ren Koda  Kosuke Suzuki  Yuki Tanaka Hirofumi Nagoshi Takafumi Miyazaki	eom@ koda@  kosuzuki@  ytanaka@ nagoshi@ tmiyazaki@	<ul style="list-style-type: none"> <li>• Differential equations, Asymptotic analysis, Inverse problems</li> <li>• Medical ultrasound imaging, Tissue elasticity measurement, Wave propagation, Micro/nano-bubble treatment</li> <li>• X-ray characterization, Backscatter imaging, Electronic structure, Functional oxide, Lithium rechargeable battery</li> <li>• High-speed arithmetic algorithm, IoT device and its management system, graph theory</li> <li>• Analytic number theory, value-distribution of arithmetic functions</li> <li>• Exponential Diophantine equation, Diophantine analysis</li> </ul>
<b>Visiting Professors</b> Naoki Kawachi  Mitsutaka Yamaguchi	m-yamaguchi@	<ul style="list-style-type: none"> <li>• Research utilizing radioisotope imaging technologies to address challenges in agriculture, medicine, and the environment</li> <li>• Development of radioisotope (RI) imaging technologies in the field of life sciences</li> </ul>

\* will retire in March, 2028

**◆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"><li>• Gene expression, Gene Therapy, Oncotherapy, DNA barcode, Next Generation Sequencing</li><li>• Chemical modification of epitaxial graphene on SiC substrate</li></ul>
Associate Professor Takehiko Yokobori	bori45@	<ul style="list-style-type: none"><li>• Biomarker research using clinical cancer specimens, Development of cancer treatment tools</li></ul>