

Organization of Chemistry Department

2026.10.1

Laboratory	Full/Associate Prof.	Research Field
Molecular Architecture	Prof. Kentaro TANAKA	The aim of our research is to develop molecular architectures with functional hierarchies and emergent properties in the interdisciplinary field of coordination chemistry, supramolecular chemistry and bio-inspired chemistry.
Inorganic Chemistry	Prof. Mizuki TADA Assoc. Prof. Satoshi MURATSUGU	Heterogeneous Catalysis. Design of metal-complex and metal nanocluster catalysts on solid surfaces. Fuel cell chemistry. Operando imaging of solid catalysts.
Bioinorganic Chemistry	Prof. Osami SHOJI Assoc. Prof. Yuichiro AIBA	Our research focuses on the development of non-native enzymatic reactions and the biomedical application of artificial metalloproteins. We mainly target heme proteins including cytochrome P450s and heme acquisition proteins, combining chemical approaches using synthetic molecules and non-natural metal complexes with genetic engineering. Functionalized artificial nucleic acids, peptide nucleic acids (PNAs) are also our research interests.
Organic Chemistry	Prof. Akiko YAGI Assoc. Prof. Hideto ITO Assoc. Prof. Hiroki HAYASHI	Our group has centered on catalyst-enabling synthetic chemistry, aiming at solving challenging problems for realizing super-efficient chemical synthesis and producing as-yet unexplored molecules of significant interest in various fields.
Functional Organic Materials	Prof. Shigehiro YAMAGUCHI Designated Assoc. Prof. Yosuke TANI Assoc. Prof. Soichiro OGI	Main group chemistry, organometallic chemistry, organic electronic materials. Development of new reactions based on the characteristic features of main group elements. Design and synthesis of new functional organic materials and their application to organic electronics and bio-imaging.
Noyori Laboratory	Prof. Ryoji NOYORI Prof. Susumu SAITO	We are developing novel organic synthesis along the interface of homogeneous and heterogeneous catalysts. Chemically inert compounds such as CO ₂ , biomass feedstock, and used polymers are the target compounds that are catalytically converted to high-value-added chemicals by hydrogenation/photoreduction. The use of solar energy for promoting otherwise inaccessible catalysis is also our strong concern, in which artificial photosynthesis directed toward organic synthesis (APOS) is under exploration.

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Bioorganic Chemistry	Prof. Hiroshi ABE Assoc. Prof. Yasuaki KIMURA	We develop innovative medicinal chemistry and biotechnology approaches for nucleic acids. The medicinal chemistry group focuses on functional mRNA for anti-viral and anti-cancer vaccines, protein therapeutics, and effective delivery methods. Meanwhile, the biotechnology group develops chemistry-based DNA assembly methods for synthetic biology. We aim to advance life sciences and promote human welfare by integrating chemistry and biology.
Photo-Physical Chemistry	Prof. Akiyoshi HISHIKAWA Assoc. Prof. Mizuho FUSHITANI	Our laboratory focuses on understanding the photochemistry of molecules interacting with ultrashort (10^{-15} s) and intense (10^{15} W/cm ²) laser pulses. We investigate multiphoton absorption, laser tunneling ionization, Coulomb explosion, high-order harmonics generation and laser filamentation. These are leading to new methods to visualize and control ultrafast dynamics in femto- and atto-second timescale as well as to synthesize and analyze new chemical materials.
Condensed Matter Physical Chemistry	Prof. Masayuki SUDA Assoc. Prof. Michio M. MATSUSHITA Assoc. Prof. Hideki NARITA	We explore novel condensed matter systems using diverse chemical techniques including organic/inorganic synthesis and electrochemistry. By controlling key parameters—such as symmetry, dimensionality, and Fermi level—we aim to design unique electronic properties like conductivity, magnetism, and topology. Using advanced fabrication and measurement methods, we study these properties and develop new materials for electronics and spintronics.
Quantum Chemistry	Prof. Takeshi YANAI Designated Assoc. Prof. Kazuhiro FUJIMOTO	Our group focuses on theoretical and computational investigation to describe chemical nature and reactivities of molecular systems by means of quantum chemistry (QC) calculations. Computing-based theoretical approaches have been growing into a method that can now provide information compensating experiment-based understanding with a substantial level of reliability and accuracy. Our interests are directed to the development of new methods that expand the domain of applications and to chemical systems to figure out elusive details of their complex phenomena.
Organometallic and Materials Group This laboratory does not accept undergraduate students.	Designated Assoc. Prof. Masakazu NAMBO	Our research group aims to develop new catalysts and reactants that enable innovative molecular transformations based on organometallic chemistry, and to create highly stable metal nanomaterials. Through our research, we hope to contribute to the advancement of science and technology toward a sustainable society.