

Division of Material Chemistry	Research field	Inorganic Chemistry	Lab. ID
			MC01
Laboratory web site	http://chem.s.kanazawa-u.ac.jp/inorg/indexe.html		
Research subjects			
<p>Best properties for high tech. material in our modern civilization often come from oxide or sulfide complexes. Biocatalysis also utilizes those metal complexes as metalloenzyme active centers. Metal oxides and sulfides are industrial workhorses, and it is versatile, and green. For true understanding of those inorganic materials, we develop the chemistry of a metal oxide molecule called polyoxometalates. We are studying such an inorganic molecule how to manipulate and to be tailored to meet all sorts of technological applications by substituting a part of the multi-metal framework to introduce other metals or metal cluster units. We study how to control the structure and property of those molecules to suit all-sort of application such as artificial photosynthesis and molecular size machines. Even if no methodology comparable to organic chemistry exists in inorganic chemistry, we help your challenges to explore and establish your own field through the discussion how to cope with the experimental conditions and control the properties you want.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>We encourage you to establish your own science through the study of your inorganic chemistry at Kanazawa University. We help you to explore the possibilities by inspiring your innovative idea and nurture your creativity through the activity on experimental plannings, laboratory hand-on classes, result evaluation strategy and literature search to cultivate the fundamental knowledge as a scientist. Of course, basic analytical techniques, fundamental chemistry knowledge, literature interpretation, scientific communication, and presentation abilities are developed, to make you ready for various local or international meetings. All individuals have given their own space for study and experiment and financial supports through teaching assistant or research assistant is also available.</p>			
Daily life in the laboratory, etc.			
<p>Our laboratory stands on synthetic inorganic chemistry, and you are going to create your high-tech materials of your own. We also conduct organic synthesis for the evaluation of catalytic properties. Your daily schedule are up to you for you self-leaning on your experimental planning and we often discuss on how to improve or overcome your experimental problem, and ultimate goal is the development of your problem solving skills. We also have sports events, field trips, baseball games and other laboratory activity. We encourage you to attend meetings including international symposiums. Nurturing your creative thinking as a scientist is our first priority.</p>			
Message or comments by the laboratory faculty staffs			
<p>We are developing the fundamentals of polyoxometalate chemistry with our dream, one day we can manipulate those molecules as our will. Especially by using the substances with vanadium, named after the Goddess of beauty, we investigate inorganic chemistry of all-inorganic coordination complexes. We make new chemistry possible, such as manipulation of the highly efficient nanosize molecular catalyst, capturing other molecules by inorganic molecular vessels, construction of chiral inorganic complexes, design a molecular machine that is a molecule with variable structures, and any chemistry no other people imagine to maximize your innovative talents.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Optical Resolution, Redox and Catalytic Properties of Chiral Polyoxovanadates		
2017.3	New Cyclic Vanadate Complexes: Structure and ⁵¹ V NMR Studies		
2017.3	Synthesis and Acid Property of Titanium-Substituted Polyoxovanadates		
2017.3	Host Property of the Bowl-Type Dodecavanadate for Neutral Molecules in Solid State		
2016.3	Reversible structural conversion of chloride-incorporated dodecavanadates for release control of chloride		
2016.3	Structure transformation among Deca ⁻ , Dodeca ⁻ and Tridecavanadates and introduction of iron ion into the framework		
2016.3	Reversible transformation between di- and trinuclear manganese and cobalt cores with cyclic polyoxovanadates		
2015.3	Optical and electrical properties of cyclic polyoxovanadates with 3d hetero-metal ions		
2015.3	Structure transformation of half-spherical polyoxovanadates and its anion encapsulation reaction		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2016.3	Study on the synthesis of charge-transfer one-dimensional assemblies based on paddlewheel-type diruthenium complexes and their magnetic and electronic properties		
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