

Division of Geosciences and Civil Engineering	Research field	Mineralogy and Crystallography	Lab. ID GC20
Laboratory web site	https://mineralsci.w3.kanazawa-u.ac.jp/mingroup/top.htm		
Research subjects			
The Earth is composed of the crust and the mantle (“a rock”) (83 vol.%) with molten metal (17%, outer core) and solid metal (0.7%, inner core) at the centre. Rock is an assemblage of minerals (solid) and therefore the major part of the Earth is an assemblage of minerals (solids). Scope of our laboratory is an investigation of nature of those minerals (naturally occurring solids, mostly inorganic, and mostly in crystalline), relating melts and amorphous (glass) phases. A nature of such an condensed matter should depend on their stereochemistry. Atoms can be condensed in solid in an ordered state, and sometimes disordered state upon quenching. Partial disorder or modulation may occur due to external pressure and/or their intrinsic nature. In such circumstances simple consideration of minerals and glasses as an “3-dimensional array of balls” will be insufficient and further consideration such as electron configuration of bunch of atoms (complex, cluster, molecular orbital, etc.) will be needed. While the background is such simple, problems and issues we have been tackling covers diverse fields for complexity of the natural system. 1. Study on relationship among atomic configuration and physical properties of metal-oxides, particularly Fe and Ti. 2. Basics of precipitation of solid from liquid, and its application on fabrication of functional metal-oxide thin film. 3. Study on structures with voids and channels and effects of those on physical properties and occurrence of modulations. 4. Ion-partitioning and modulation on atomic arrangement on feldspathoid mineral. 5. Spin-state in wüstite under ultra-high pressure. Our group is usually using several types of electric furnace including zone-melting style for crystal growth, glove-box and incubators for preparation of wet samples. Our devices includes four-circle and two-circle autmated X-ray diffractometers, X-ray fluorescent spectrometer, various types of X-ray cameras, IR spectrometers and a Raman spectrometer for sample analyses. We have been conducting corroborative projects with Universities and private companies.			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
In addition with small meeting of each unit our laboratory have weekly seminar for whole lab members. This weekly seminar is usually utilized for reporting recent progress by students, introducing classic articles and reporting most recent advancements on his/her own topic. Every single student should have his/her own research topic, plan experiments, compile results and finish his/her own research work by him/herseif under guidance from supervisor. We strongly recommended students to have a presentation of their achievements at an international conference.			
Daily life in the laboratory, etc.			
Students' room and experimental labs (devices) are separated. One dedicated desk with bookshelf is provided for every single student. We have open PC in students' room, which can be connected to academic IP network which is not open for students.			
Message or comments by the laboratory faculty staffs			
Please keep it in your mind that students in a postgraduate school are nothing but “young scientists”. Only difference between postgraduate students and their supervisors should be an amount of experience, and both are evenly under the necessity of being logical and faithful on research.			
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