

Division of Environmental Design	Research field	Materials	Lab. ID ED02
Laboratory web site	http://webserv.ce.t.kanazawa-u.ac.jp/material/student/indexmaterial.html		
Research subjects			
<p>There are three faculty members in the lab. Two of them are involved in researches on durability of concrete. These days, sustainability is the most common and important keyword in the field of concrete engineering. Development of sustainable concrete is addressed from the standpoint of maintenance engineering for deteriorated concrete structures. In particular, our lab is very famous for the academic achievements of research on alkali silica reaction of concrete. The third has been carrying out extensive research into materials science of concrete. Evolution of microstructure in concrete is investigated based on microscopic examination combined with spatial statistics. Mechanical properties and durability issues of concrete are interpreted based on geometrical characteristics of microstructure.</p> <p>In a word, the motto of the whole activity is from basic science to in-situ technology. Google us. You'll easily find our international activity.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Basically, research topics for the higher degrees are given by the supervisor. The students are required to do experiments and the other lab works, following the directions. The lab has many pieces of advanced equipment. At first they have to learn how to use and operate testing apparatus. They must know safety is the first priority in the lab. Analyzing the test and experimental results, and discussing them with the supervisor, they are trained to write research papers with a high quality for academic conferences and journals. It is common that a student attends some conferences to present their papers a couple of times a year.</p>			
Daily life in the laboratory, etc.			
<p>As mentioned above, they have to do various experiments in addition to course works. They are also expected to work as a leader who instructs undergraduate students on the research. In some cases, they go out for investigating old concrete structures and field tests. The research topics are often joint projects with the industry. To proceed the project works smoothly, the students are sometimes requested to attend important meetings with the industry as a young researcher. To prepare presentation files and meeting materials in advance is also important works of the student. We are sure that these things are good training for getting jobs in the industry or having job interviews.</p>			
Message or comments by the laboratory faculty staffs			
<p>All the research activities in the lab are based on experiments done by accurate measurements and deep insight about their results. We expect you to take a part in the experiments and field investigations actively. Enjoy the process to complete a good thesis. When you stand at a starting point, you will see a long way to go before you to finish your thesis. However, once you have started, we are sure you can see many fruitful and impressive things along the course as long as you are interested in advanced research works. You will probably find a clear trail which is painted until the goal by your supervisor. When you see other runners running ahead, maybe you want to catch up with them? OK, we always run with you, and put you ahead of the preceding runners by magic hands.</p> <p>Come over here. We are waiting for you at the starting line. The entrance of the stadium is open 24/7 for those who are interested in working at the cutting edge of concrete materials and structure and "Japanese culture."</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	A Study on Research Development of Precast Prestressed Concrete Slab Decks using Flyash Concretes and Its Practical Application		
2017.3	A Study on the Load-bearing Capacity of ASR Affected PC-JIS Girders and Its Mitigating Effect by Flyashes		
2017.3	A solution for the trade-off problem between mitigation of shrinkage and reduction of strength in concrete using superabsorbent polymers as internal water reservoirs		
2017.3	Identification of interfacial transition zone (ITZ) in the distribution of cement particles as spatial point processes		
2016.9	A Study on the Absorption and Diffusion Characteristics of Cesium in Hardened Cement Pastes		
2016.3	Study on combined deterioration of ASR deteriorated concrete structure affected by de-icing salts		
2016.3	A Study on the Effective Utilization of High-quality Flyashes in Concrete in Hokuriku District		
2016.3	Quantitative evaluation of spatial distribution of air voids in concrete using point process statistics		
2015.3	Influence of various conditions on the steel corrosion behavior in salt attack environment and rehabilitation effectiveness using silane impregnants		

2015.3	Study on the simplified chloride ion permeation prediction method and the repair measure on the basis of real state of deterioration in bridge pier affected by de-icing salts
2015.3	Evolution of microstructure in the setting period during hydration process of Portland cement
2015.3	A Study on the ASR mitigation Effect of Classified Fine Fly Ashes for Reactive Aggregates in Hokuriku district
2014.3	Effects of superabsorbent polymers on properties of concrete
2014.3	Evaluation of performance of silicate-based penetrants based on changes in capillary pore structure
2014.3	Image analysis of concrete sections using RGB information
2014.3	A Study on the Evaluation of Diffusivity of Ions through Hardened Cement Pastes
2014.3	The development of Effective Utilization of Classified Fine Fly Ashes in Concrete
2013.3	Effects of carbonation on microstructure in concrete
2013.3	Characteristics of microstructure in cement pastes treated with silicate-based penetrants
2013.3	A Study on High Durable Prestressed Concrete Using Classified Fine Fly Ashes
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2017.3	Characteristics of spatial structure of coarse capillary pores and their effects on permeability of cement pastes
2016.9	A Study on the Geological Characteristics of Reactive Aggregates and the Maintenance Management for ASR-deteriorated Concrete Structures in the Noto district
2016.9	Evaluation of spatial structure of air voids in concrete by point process statistics
2015.9	A Study on the Field Survey and Countermeasures of Combined Deterioration of Concrete Structures Exposed to Various Environmental Conditions
2015.3	A Study on the Diagnosis Technologies of ASR in Concrete of Highway and the Improvement of Durability of Pavement
2015.3	A Fundamental Study on the Geological Distribution of Alkali-Silica Reactive Rocks in Japan and the Assessment of Alkali-Silica Reactivity for Aggregates by Petrographical Examinations
2014.9	A Fundamental Study on the Assessment of Fly Ash Addition and Repair Material Effect on the Mitigation of Alkali Silica Reaction in Concrete
2014.9	A Study on the Assessment of Quality Performance and Practical Use of Concretes Using Classified Fine Fly Ashes in Hokuriku District
2014.3	A Study on the Management System for Production and Construction of Self-Compacting Concrete
2013.3	A Study on the Actual-State Survey and Maintenance for ASR-Deteriorated Bridges in Noto Express Highway
Laboratory mail address	
	Prof. Torii, K. <torii *at* se.kanazawa-u.ac.jp> Prof. Igarashi, S. <igarashi *at* se.kanazawa-u.ac.jp> Assoc. Prof. Kubo, Y. <ykubo *at* se.kanazawa-u.ac.jp> Lab. Tech. Yamato, H. <yamato *at* se.kanazawa-u.ac.jp>