

Division of Mechanical Science and Engineering	Research field	Tribology	Lab. ID
			MS10
Laboratory web site	http://www.ms.t.kanazawa-u.ac.jp/~tribo		
Research subjects			
<p>Tribology is defined as the science and technology of friction, wear, and lubrication in 1966 at a workshop of OECD meeting. However, the relation of tribology to human continues from ancient era life to modern advanced technology. Tribology of soft materials such as rubber, polymers, and gels is the main subject of this laboratory. The major application of rubber is passenger's vehicle tire. The hydrogel is said to be the candidate material for the cartilage of artificial joint.</p> <p>Not only the frictional experiment but observation using optical method are conducted for the research.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Schedule meeting at the beginning of the first semester is held to each master course student so as to both confirm their objectives of the research theme and experimental procedure. Although each student handles individual research subject, a group composed of a few students is assigned a wider theme. Research meeting is held once a week to present the progress of the research. Student should read a specialized book of tribology or rubber in turns and present a paper associated with the research subject.</p> <p>Students are encouraged to present their research result at a conference to transmit the information externally and attend the domestic and local meetings. The laboratory's final goal is set to present at an international conference held abroad. 80% of the graduated students have presented their results internationally.</p>			
Daily life in the laboratory, etc.			
<p>The life in this laboratory is on the basis of voluntarism. There is no limited time to arrive the laboratory room, but earlier in the morning is highly recommended. All relevant students share the laboratory rooms and spend times freely. Students sometimes conducts their experiments or preparation at late night prior to the research meeting or the application deadline of the society.</p>			
Message or comments by the laboratory faculty staffs			
<p>The life in this laboratory is on the basis of voluntarism. There is no limited time to arrive the laboratory room so that student is required high independency. The supervisor give the objective and the anticipated results at the beginning and advice the course of the action. Student should think about the procedure to reach the final conclusions. Students are encouraged to present their research result at not only domestic but international conference. Student can take advantage of an opportunity to train themselves.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Effect of squeeze film on the friction properties of polyvinyl alcohol hydrogel		
2017.3	Clarification of edge effect on the friction properties of porous rubber for studless tire		
2017.3	Tribological properties of tire tread rubber at low temperature		
2016.3	Effect of severity on the friction and wear of silica filled rubber for fuel-efficiency tire		
2016.3	Effect of surface texture of mating disk on the friction and wear of rubber under oil lubrication		
2016.3	Variation of high-order structure of silica filled and carbon black-filled rubber by friction stress		
2016.3	Variation of worn surface of PVA hydrogel as a candidate material for artificial cartilage		
2015.3	Friction and wear properties of PTFE composites under hydrogen environment -The influence of temperature-		
2015.3	Basic research of personal authentication by comparison of ground reaction forces during walking		
2015.3	Absorption and drainage properties of water on the porous rubber used as a studless tire		
2014.3	Relation between the inner deformation and tangential coefficient of a tire during rolling		
2014.3	Effect of surface roughness of the mating surface on the friction and wear of rubber		
2014.3	Relation between real contact area and friction properties of a paper based friction material for wet clutch		
2013.3	Friction and wear properties of tire tread rubber at low slip rate		
2013.3	Clarification of wear mechanism of silica-filled rubber for fuel-efficient tire		
2013.3	Effect of contact pressure and surface geometry on the friction and wear of rubber		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
Laboratory mail address	iwai *at* se.kanazawa-u.ac.jp		