

Division of Natural System	Research field	Polymer Physics	Lab. ID
			NS15
Laboratory web site	<a href="http://polymphy.w3.kanazawa-u.ac.jp/english">http://polymphy.w3.kanazawa-u.ac.jp/english</a>		
Research subjects			
<p>Commodity polymers such as polyethylene and polypropylene are widely used as materials in our daily life. Polyethylene and polypropylene have complex structures which consist of crystal and amorphous regions. Although mechanical properties such as hardness and strength depends on these structures, the relation between the properties and structures is not well understood. Therefore polymer processing still largely depends on experience and intuition. In Polymer Physics laboratory, we study the relation between various structures ranging from molecular to macroscopic scales, and various material properties. We use experimental approaches such as mechanical, thermal, structural, and spectral analysis and also simulation approaches.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Each student is expected to conduct his/her own research autonomously. Some topics are based on joint researches with private companies. For active students, we will give many opportunities to give talks/posters at academic meetings and to write publications. Usually, all the graduates school students have several chances to give talks at meetings. Every staff member is respectful to students' opinions based on their experiments, and love to have academic discussion with them. Students are trained their skills for logical thinking, solving problems, and presentations, via weekly progress and journal meetings. Many alumni work actively at first-class companies.</p>			
Daily life in the laboratory, etc.			
<p>We have a variety of good characters and respect each other. (M2) I feel it easy to talk to staffs, and discuss with other students frequently. (M1) We can get knowledge of various non-academic things. For example, I learned about information of companies from the alumni. (M2) We can extend our knowledge because each students have their own themes. (B4) I studied how to write logical texts, which will be useful for job hunting. (M2) Experiments before academic meetings are hard, but we will do such jobs autonomously. (M1) I play hard as well as I do my research hard. (M1) We have advantages on taking scholarships because we have opportunities to give talks at meetings. (M2)</p>			
Message or comments by the laboratory faculty staffs			
<p>We provide opportunities for students to learn various skills useful to build their carriers after graduation. Students are required to conduct their researches at a high level, enough to give talks at academic meetings, and to write papers. All the academic staffs speak English. We welcome active and willing students from abroad, who are interested in basic researches on polymeric materials, as well as joint researches with companies from all over Japan.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Fluorescence probe method for charactering the stress and failure in polyethylene under uniaxial stretching.		
2017.3	In-situ Raman spectroscopic studies of melting and crystallization mechanisms for isotactic polypropylene.		
2017.3	Biaxial deformation behavior for isotactic polypropylene-based blend films.		
2017.3	Additional effects of polypropylene-carbonate doped with ionic liquids on mechanical and electrical properties in high density polyethylene.		
2017.3	Thermal shrinkage behavior of cold-drawn isotactic polypropylene films.		
2017.3	Tear behavior of polypropylene-based blends.		
2016.3	A small angle X-ray scattering study of necked polypropylene films		
2016.3	Tensile properties of ultra low density polyethylene		
2016.3	Rheo-optical Raman studies of deformation behavior of semi-crystalline polymers		
2016.3	Stochastic analysis of tearing behavior in rubbers using trousers test		
2016.3	Specimen profile and molecular orientation of necked semi-crystalline polymers		
2016.3	Compressive deformation mechanism of moderately expanded low density polyethylene foams		
2015.3	Effect of primary structure on properties in polyoxymethylene		
2015.3	The additional effects of CO <sub>2</sub> -based polycarbonate to on the mechanical properties of polypropylene		
2015.3	Thermal shrinkage behavior of necked high density polyethylene film		
2015.3	Uniaxial deformation behavior of thermoplastic polyamide elastomers		

2014.3	Analysis of Bending Deformation Behavior of High Density Polyethylene
2014.3	Study on Plastic Deformation Behavior of Isotactic Polypropylene Blends
2014.3	Study on Biaxial Elongation Behavior of Beta Crystal Isotactic Polypropylene
2014.3	Stochastic Analysis of Fracture Behavior of Polypropylene
2013.3	Nonlinear constitutive relation of creep behavior under true stress in polyoxymethylene
2013.3	Strain hardening behavior under uniaxial elongation in isotactic polypropylene
2013.3	Raman spectroscopic study of molecular deformation under tensile tests for polyethylene materials
2013.3	Tensile properties of shape memory polyurethanes with different segmented structure
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2012.9	Structure and Mechanical Properties of Thermo-degraded Isotactic Polypropylene with Nucleating Agent
2012.9	Spectroscopic Study on Change of Polymer Chain State in Stress Field for Crystalline Polymer Solid
Laboratory mail address	polymphys@ml.kanazawa-u.ac.jp