

Division of Mechanical Science and Engineering	Research field	Laser Processing	Lab. ID
			MS07
Laboratory web site	<a href="http://manufac.w3.kanazawa-u.ac.jp/">http://manufac.w3.kanazawa-u.ac.jp/</a>		
Research subjects			
<p>This laboratory aims to create high quality and functional surfaces of metals, hard-brittle materials, difficult-to-machine materials, parts produced by powder sintering, biomedical materials and others by several machining process or modification such as laser processing, cutting, grinding, abrasive processing, sintering, laser heat treatment and combination of these manufacturing processes.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Almost all topics in laser processing laboratory are joined research with company, therefore all students need to select their themes from these. Research keywords are laser processing, additive manufacturing, laser dentistry, monitoring of machining process, and so on.</p> <p>As for foreign students, we have a couple of foreign students, and all activities or correspondences in the laboratory are done in English. The laboratory is managed by a weekly labo-meeting which must be attended by staffs and all students, where all policies and practical financial supports for research are discussed and determined.</p>			
Daily life in the laboratory, etc.			
<p>Personal working desk is available for every student. All relevant students of undergraduate, Master, Doctor and post Doctor researchers share the laboratory rooms, and everyday free discussion on manufacturing processes or related topics are strongly encouraged. Many laboratory activities are organized like, welcome party for new comers, excursion, summer workshop, etc.</p>			
Message or comments by the laboratory faculty staffs			
In our laboratory, many foreigners are getting Ph.D. I am looking forward to doing the research with you.			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Study on laser treatment of biomaterials -Removal mechanism of human tooth and bone scaffold-		
2017.3	Study on laser cleavage of chemically strengthened glass		
2017.3	High quality building of consolidated structure obtained by powder bed fusion		
2016.3	Surface Finishing of Cooling Channel inside the Die Casting Molds with Free Abrasive Grains		
2016.3	Study on the consolidation mechanism of metal powder		
2016.3	Study on additive manufacturing of biomaterial powder		
2016.3	Study on end milling of aircraft materials		
2015.3	Permeability Characteristics of Porous Structure Fabricated by Additive Manufacturing		
2015.3	Reduction of Deformation of Metal Structure Fabricated by Additive Manufacturing		
2015.3	Crack Propagation Mechanism of Laser Cleaving of Laminated Wafer		
2015.3	Advancement of Laser Dentistry Mechanism of enamel removal by CO2 laser beam irradiation		
2014.3	Internal Face Finishing of Cooling Channel within Molding Die with Flowing Slurry Influence of Protuberance Shape on Workability		
2014.3	Laser-assisted Milling of Ceramic Matrix Composites		
2014.3	Removal Characteristics of Dental Tissue with Er:YAG Laser Irradiation Effect of Laser Induced Bubble on Cavity Preparation		
2014.3	Study on Grinding Characteristics of Ceramic Matrix Composites Evaluation of Machinability with Vitrified-bonded Super Abrasive Stone		
2014.3	Experimental Investigation on Laser Flattening of Sheet Metal		
2014.3	Study on Machining of Ceramics Matrix Composites Application of Ultrasonic Machining, Laser Processing and End Milling		
2014.3	Thermal Cleaving of Laminated Wafer with Laser Beam Irradiation		
2013.3	Reduction of Residual Stress Induced during Rapid Tooling Process		
2013.3	Fabrication of Air-bent Structure by Additive Manufacturing		
2013.3	Elucidation of Bactericidal Effects Induced by Laser Beam Irradiation		
2013.3	Rapid Fabrication of Thermal Induced Plastic Micro Lens by Laser Beam Irradiation		
2013.3	Laser Cutting of Carbon Fiber Reinforced Plastic		
2013.3	Laser Cleaving of Sapphire Wafer with Groove		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		

2015.3	Study on Laser Cleaving Mechanism of Brittle Materials
2014.3	Consolidation Behavior of Metal Powder in Additive Manufacturing
2013.3	Studies on Reduction of Residual Stress and Deformation in Consolidated Structure Fabricated by Milling-combined Laser Consolidation System
2012.9	A study of Bactericidal Action by Nd:YAG Laser Irradiation with the Addition of TiO <sub>2</sub> The Bactericidal Effect by Heat and Induced Dynamic Stress
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