

Division of Mechanical Science and Engineering	Research field	Heat Engines	Lab. ID MS06
Laboratory web site			
Research subjects			
<p>We have two groups.</p> <p>Solutions for Energy and Environment: A downdraft gasification generator with wood biomass is developing in Lab. The capacity is 2kW. This system is enlarging up to 100kW. As liquid fuel is expensive, we try to develop a new atomizing concept for more efficient combustion.</p> <p>Fundamentals and Application of Heat Transfer: The main target is in liquid–solid phase change, particularly ice freezing. We have the developed the technique to control of ice crystal orientation for freezing concentration.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>A subject of Master/Doctor thesis will be decided by common agreement by advisor and student.</p> <p>A weekly briefing on the research will be carried out.</p> <p>Student should aim to submit a conference or journal publication once or more a year.</p> <p>Events; plant tour, various workshop of academic society, etc.</p>			
Daily life in the laboratory, etc.			
Students life in the laboratory is on self–government of students.			
Message or comments by the laboratory faculty staffs			
We give much weight to communication between advisor and students in order to achieve satisfactory research outcomes. It will follow that students get a joy to discover something new which has not been proposed before.			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Combustion of Kerosene and Diesel oil droplet under supercritical condition		
2017.3	Effect of Growth Velocity on Changing Rate of Crystal Orientation of Ice Crystal Growing along Solid Surface		
2016.3	Observation of particles and fuel droplet under supercritical condition		
2016.3	Behavior of small spark ignition engine using syngas made from woody biomass		
2016.3	Effect of ice crystal anisotropy on efficiency of freeze concentration		
2016.3	Development of orifice accelerated collision–type bio–oil recovery equipment		
2016.3	Elucidation of the contactless small droplet division mechanism using high power light source		
2015.3	Observation of a small droplet near hot surface under high pressure condition		
2015.3	Pressure drop decreasing in wood biomass downdraft gasifier		
2015.3	Observation of fuel droplet near wall under high pressure air condition		
2015.3	Thermal contact resistance between sliding surfaces of ice–maker using metallic belt		
2014.3	Relation between knock strength decreasing and operation in small spark ignition engine with gasoline/kerosene mixed fuel		
2014.3	Observation of luminous flame and small droplet evaporation		
2014.3	Crystal orientation changing during solidification of supercooled water in acrylic rectangular microtube		
2014.3	Freezing concentration by an ice–maker using metallic belt		
2013.3	Effect of fuel temperature on atomization with local–contact microwave–heating injector		
2013.3	Effect of kerosene ratio in gasoline base fuel with small spark ignition engine		
2013.3	Analysis of high pressure direct injection system in small spark ignition engine		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2015.3	Numerical Simulation on Local–Contact Microwave–Heating Injector(LMI) System		
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