

Division of Natural System	Research field	Thermofluid and Particle System	Lab. ID
			NS16
Laboratory web site	http://aerosol.w3.kanazawa-u.ac.jp/		
Research subjects			
<p>Aerosol is a system composed of small liquid or solid particles suspended in gas. In our laboratory, formation, measurement and control of aerosol particles are investigated to apply these aerosol technologies to various fields such as material science, energy and environments and human health. Development of energy utilization technology is also our main topic. In particular, high density adsorption heat pump composed of fine particle accumulated metal surface is studied. Control technologies of fine particles were also under development such as centrifugal and inertial separator, nanofiber, PM2.5 measurement device and ventilation of mist and fume. For the nanomaterial production, laser ablation and supercritical fluid techniques are also investigated to fabricate nanodevices for energy conversion and storage. New types of aerosol charger and microplasma ionizer are also under development for measurement of aerosol particles.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Each master course students have their own (original) research subject. Many subjects are related to collaborative works with companies and national institutes. PhD candidates will organize research team with master students and bachelor students as well as studying their own subject. All students are divided to approximately six research teams and team meeting is held every week. The student is recommended to present their research results at international conference.</p>			
Daily life in the laboratory, etc.			
<p>Many foreign students (mainly from Asia) are joining to our laboratory. We also have many collaborative researches with companies. The students have frequent chances to join recreation and party for training communication skills.</p>			
Message or comments by the laboratory faculty staffs			
<p>Our laboratory was established in 1968 and it has more than 40years history. Currently 5 professors and 2 staff and many (more than 50) students are studying in this laboratory. Main research topics are aerosol formation, measurement, filtration, environment, heat pump, biomass etc. We are working hard under the slogan of "enjoy studying!". We have much international collaboration as well as collaborative research with companies. Let us study together in our global laboratory!</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.9	Electrospray deposition of Ag nanoparticle film and its application to surface enhanced Raman scattering substrate		
2017.9	Flow visualization and collection performance of new type centrifugal filter		
2017.9	Synthesis of PAN/SiO ₂ nanofiber composite by electrospinning		
2017.9	Filtration of coagulating aerosol particles		
2017.3	Effect of slip flow on collection performance of nanofiber filter		
2017.3	Synthesis of nanoparticles by spark discharge and evaluation of their morphology		
2017.3	Suppression of multiply-charged in microplasma aerosol charger		
2017.3	Formation of solid adsorbent layer on aluminum sheet by using silane coupling agent		
2017.3	Application of centrifugal filter to measurement of aerosol particle size distribution		
2017.3	Evaporation and breakup dynamics of nanofiber by electrospinning		
2017.3	Charge neutralization of electret filter by organic solvents and surfactants		
2017.3	Centrifugal separator for PM2.5		
2017.3	Filtration performance of nano/microfiber mixed filter		
2017.3	Improvement of dispersion performance of Super Jet Mill for submicron particles		
2017.3	Flue gas sampling from incinerators		
2017.3	Adsorption behaviors of methanol vapor on compacted activated carbon fiber		
2017.3	Dynamics of highly charged nanodroplets generated by electrospray		
2016.9	Effect of background gas on graphene formation by laser ablation		
2016.9	Application of centrifugal filter to air cleaning equipment		
2016.9	Growth process of atmospheric nanoparticles in Fukue Island		
2016.3	Sieving of aerosol particles with metal screens		

2016.3	Measurement and collection of oil mist generated by manufacturing processes
2016.3	Localized deposition of aerosol particles by electrostatic focusing
2016.3	Measurement and collection of particulate matters generated in soldering reflow furnace
2016.3	Development of acceleration test for predicting HVAC filter life
2016.3	Effect of filter media properties on collection performance of centrifugal filter
2016.3	Preparation of metal salt/anodized alumina composites and their water vapor sorption characteristics
2016.3	Quantum properties of morphology-controlled silicon nanoparticles synthesized by laser method
2016.3	Effect of filter structure on cleaning performance of bag filter
2016.3	Effect of surrounding fluids on morphology of carbon nanoparticles generated by laser ablation
2016.3	Pyrolysis of Mongolian brown coal
2016.3	Synthesis of silicon nanowires by laser ablation
2016.3	Development of electrostatic precipitator for welding fume
2016.3	Evaporation of multiply charged nanodroplets generated by electrospray
2015.9	Effect of filter inhomogeneity on reduction of pressure drop due to slip flow
2015.9	Development of single particle trap system for aerosol visualization
2015.3	Compression Molding Mechanisms of Mesoporous Silica Adsorbent and Its Water Vapor Adsorption Characteristics
2015.3	Development of Activated Carbons with Large Specific Surface Area densified by the addition of PTFE
2015.3	Development of High-efficiency Aerosol Charger with Suppression Multiply-Charged Particles
2015.3	Sintering, Crystallization and Surface Reaction of Silicon Nanoparticles Suspended in a High Temperature Reactive Gas
2015.3	Observation of Atmospheric New Particle Formation in Fukue Island
2015.3	Dry Dispersion Mechanisms of Submicron Particle Aggregates by Super Jet Mill
2015.3	Development and Evaluation of Air Filter for Mist Removal
2015.3	Graphitization of Quartz Surface by Laser-induced Backside Reactive Deposition
2015.3	Molecular Dynamics of Competitive Evaporation of Solvent and Ion from Highly Charged Nanodroplets
2014.9	Effect of Humidity on Plasma Decomposition of Naphthalene Vapor
2014.9	Particle Collection Performance of Air filters in Cyclic Flow
2014.3	Enlargement of porous diameter of alumina thick film and deposition of Calcium chloride
2014.3	Formation of aluminum oxide film by constant voltage cathode oxidation
2014.3	Water vapor absorption characteristic of mesoporous silica/metal complex material
2014.3	One step synthesis of core shell nanoparticles with Si core by laser ablation
2014.3	Application of PM0.1 filter for chemical analysis of atmospheric nanoparticles
2014.3	Development of mobility spectrometer combined with microplasma ionizer
2014.3	Deposition of macromolecular ion with controlled charge state on solid surface
2014.3	Measurement and collection of welding fume in the manufacturing of large machinery
2014.3	Fabrication of nanoparticle accumulated film by transfer of nanoparticles collected on air filter
2014.3	Effect of nanofiber accumulation on the performance of air filter
2013.3	Basic study of rapid thermal decomposition of wood skin
2013.3	Development of complex materials for low pressure water vapor absorber
2013.3	Preparation of activated carbon fiber adsorption material with deposition of Calcium chloride
2013.3	Development of new type atomizer for analyzing nanoparticles in ultrapure water by spray dry method
2013.3	Synthesis of silica/Ito composite materials by spray pyrolysis
2013.3	Laser induced nanostructuring of aerosol carbon nanoparticles
2013.3	Dispersion of submicron powder by jet mill
2013.3	Analysis of Heat and Mass Transfer in Porous Ceramic Substrate for Green Roof Topping
2013.3	Effect of artificial polymer on the ice nucleation on AgI surface
2013.3	Formation of growth of nanoparticles by ozone oxidation of isoprene
2012.9	Preparation of air filter test aerosol by dispersion of powder
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2017.9	Aerosol particles Collection by Centrifugal Filter
2017.9	Application of centrifugal filter to aerosol size distribution measurement
2017.9	Measurement and field observation of atmospheric nanoparticles
2016.9	Structural Control of Nanoparticles and Thin films by Laser Ablation
2016.3	Water vapor sorption on metal salt-anodized aluminum composites for sorption
2015.9	Development and evaluation of high performance air filter for mask

2015.9	Control of charge state of aerosol particles in industrial process
2014.9	Nucleation and growth of atmospheric nanoparticles
2014.3	Formation of charged nanodroplets and its characteristics
2013.3	Characterization of Surface Dielectric Barrier Discharge and Its Application for Decomposition of Polycyclic Aromatic Hydrocarbons
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