

Division of Natural System	Research field	Chemical Reaction Engineering	Lab. ID NS13
Laboratory web site	http://ktlabo.w3.kanazawa-u.ac.jp/Kenji_Takahashi_Labo/Welcome.html http://chemeng.ch.t.kanazawa-u.ac.jp/separation/home.htm		
Research subjects			
<p>We are focusing on the development of environmentally friendly (bio)chemical reaction processes using ionic liquids, supercritical fluids, plasma and microwave and bioconversion. These advanced technologies are very important to achieve sustainable development.</p> <p>In addition, we study about the contribution of a wide variety of bio-functions to our living, and about techniques to control circulation of various materials through industry and nature.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Master and doctor course students select the supervisor and belong to one of the research groups. Students are encouraged to go for outer activities, participating research workshops/meetings, international conferences, even foreign country institutes. Financial supports are usually available and determined by the laboratory meeting. As for foreign students, we have five or six foreign students, and main activities or correspondences in the laboratory are done in English.</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 Doc researchers share the laboratory rooms, and everyday free discussion on the related topics are strongly encouraged.</p> <p>Teachers scolded our frivolous stance for research and also instruct us about the general attitude towards life such as greetings strictly. However, all the teachers are gentle and give us various support to improve our research skills.</p>			
Message or comments by the laboratory faculty staffs			
<p>We welcome the student who is interested in our research.</p> <p>After taking the master's degree, graduates enter general companys (chemicals, materials, foods, pharmaceutical, facillity, machinary, etc.) and take occupation as public servants, etc.</p> <p>After taking the doctoral degree, graduates will be post doc researchers (include at foreign countries), research or educational staffs at higher education organization, research laboratory staffs at related companies, etc.</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 contaminants of waste glycerol from BDF production on microbial metabolisms		
2017.3	Production of lignin monomers from enzymatic saccharification residue lignin, and their bio-conversion to a plastic monomer		
2017.3	Production of 2-pyrone-4,6-dicarboxylic acid by saccharification and fermentation of lignocellulosic biomass pretreated with ionic liquid		
2017.3	A study on the novel copolyester decomposition process for carbon fiber reinforced thermoplastic recycling		
2017.3	Culture and valuation method for 3D tissue assembled using multicellular spheroid as building block		
2017.3	Production of cured epoxy resin using enzymatic saccharification residue lignin, and its application to CFRP matrix		
2017.3	Assembly of 3D tissue using micro-vascularized multicellular spheroid as building block		
2017.3	Effective dissolution of biomass in ionic liquids by irradiation of non-thermal atmospheric pressure plasma		
2017.3	Structural Transformation of Cellulose Induced by Ionic Liquid		
2017.3	Interfacial shear strength of carbon fiber/cellulose derivatives composite		
2017.3	One-pot ethanol production from bagasse using novel low toxic-cellulose solvents		
2016.3	Saccharification and fermentation from biomass pretreated with minimum amount of biocompatible ionic liquid		
2016.3	Screening and characterization of ionic liquid tolerant cellulase produced by marine bacteria		
2016.3	Acetylation and fractionation of lignocellulosic biomass using acidic ionic liquids as catalyst		
2016.3	Development of two-phase partitioning bioreactor system with continuous exchange of hydrophobic organic solvent for continuous production of 3-methylcatechol		
2016.3	Development of efficient chemical conversion process of polymer materials from biomass using ionic liquids based organocatalysts		

2016.3	Application of lignin as compatibilizing agent for carbon fiber reinforced plastic
2016.3	Recovery of ionic liquids using electro dialysis in saccharification process of lignocellulose
2016.3	Aeration switching method for succinic acid productivity from BDF waste by <i>Serratia</i> sp.
2016.3	Reaction of chemical active species produced by microwave bubble plasma in gas-liquid interface
2016.3	Solute diffusion in silicone ionic liquids studied by transient grating method
2015.3	Search of the metabolism inhibitor which makes promote the killing of the cancer stem cell based on metabolomics data
2015.3	Effect of ultrasound irradiation on cationic liposome-assisted transfection
2015.3	Physiological state recognition of fermentation process based on olfactory information processing model
2015.3	Effect of pH on halo catechol production by two phase partitioning system with immobilized cell
2015.3	Study on efficient method for phosphorus elution from food waste
2015.3	Biorefinery of lignin using ionic liquids
2015.3	Hydrolysis reaction of lignocellulosic biomass assisted by the synergetic effect of acidic ionic liquid and microwave irradiation
2015.3	Identification of chemically active species generated by atmosphere pressure pulse plasma and its application to sewage treatment
2015.3	Development of photochemical cell using sugar and lignin as fuel
2015.3	The molecular diffusion coefficient in ionic liquid containing siloxane structure studied by transient grating method
2014.3	Utilization of lignin fractionated from ionic liquid to resin materials
2014.3	Shape control of the semiconductor sub-micrometer spherical particles in the liquid phase by the nanosecond double pulse-laser irradiation method
2014.3	Conversion of lignin to useful materials by depolymerizing method using the hydroxy radical
2014.3	Development of the photochemical cell using biomass as fuel
2014.3	Reaction of lignin model molecules using microwave bubble plasma
2014.3	Saccharification and fermentation from biomass pretreated by biocompatible ionic liquids
2014.3	Sonocatalytic injury of cancer cells attached on the surface of a nickel-titanium dioxide alloy plate
2014.3	Analysis of pollution by polycyclic aromatic hydrocarbons in the Japan Sea surface water
2014.3	Targeted and ultrasound-triggered cancer cell injury using perfluorocarbon emulsion-loaded liposomes
2014.3	Phosphorus elution method from poultry manure for the on-site recovery at poultry operations
2014.3	Development of two phase partitioning bioreactor for hydrophobic substance production
2014.3	Effect of pH and CO ₂ on Succinate production from glycerol-containing waste from biodiesel fuel production by <i>Serratia</i> sp.
2013.3	Reformulation of lignin by microwave heating treatment
2013.3	Reaction control of chemical species produced in plasma on water surface
2013.3	Formation of semiconductor sub-micrometer spherical particles in ionic liquid by irradiation of nanosecond pulse-laser
2013.3	Isomerization reaction of chlorogenic acid derived from coffee
2013.3	Effect of ultrasound irradiation on bacteriofection to cancer cells
2013.3	Selection and modification of DNA aptamer recognizing human hepatocarcinoma
2013.3	Sonodynamic cancer therapy using titanium dioxide nanoparticles with binding capability to cancer cells
2013.3	Cancer therapy using ultrasound-responsive bubble micelles binding capability to cancer cells
2013.3	Succinate production from glycerol-containing waste from biodiesel fuel production by <i>Raoultella planticola</i>
2013.3	Effect of chelating agents on phosphorus elution from activated sludge
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2015.3	Molecular breeding of <i>Cupriavidus necator</i> for industrial production of biodegradable biopolymer poly(3-hydroxybutyrate-co-3-hydroxyhexanoate)
2014.3	Study on mechanism for drug release from W/O emulsion
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