Seeds N@vi
Waseda University Technology・IP Seeds

WASEDA UNIVERSITY Technology seeds List

2025/12/08

type of seeds	number	field	title	researcher	summary	posted
research	2024-0206-03	Life sciences	Establishment of new chemical reaction methods	Assistant Professor Faculty of Science and Engineering School of Fundamental Science and Engineering		2024/02/06
research	2024-0206-01	Life sciences	Simultaneous detection of multiple antigens using temperature-responsive fluorescent nanoparticles	Professor Faculty of Science and Engineering School of Advanced Science and Engineering		2024/02/06
research	2022-1021-01	Life sciences	Screening and evaluation system for anti-aging chemicals	Professor Faculty of Human Sciences School of Human Sciences	● Screening system for anti-aging chemicals● Genes related to life extension and use thereof	2022/10/24
research	2022-1020-09	Life sciences	Novel infertility treatment using cell sheet technology	Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	● Infertility treatment that engrafts fertilized eggs in the intimal tissue using cell sheet technology.	2022/10/24
research	2022-1020-07	Life sciences	Cultured meat production with culture medium made from waste food	Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	● A major part of the cost of producing cultured meat is the growth factors and serum of the culture medium. ● By containing a homogenized extract of waste meat in the basal medium, a large number of muscle cells can be amplified in a growth factor-free and serum-free methods.	2022/10/24
research	2022-1020-05	Life sciences	Sins of anticancer drugs	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● Whereas anyone can measure nucleic acids, what we really would like to know are the trace amounts of proteins that function in the body. ● Application of an ultrasensitive ELISA enables us to detect proteins responsible for malignant transformation.	2022/10/24
research	2022-1020-03	Life sciences	Research on improving mental health problems using the iACT self-help application "emol"	Professor Faculty of Human Sciences School of Human Sciences	● Realize an intervention with iACT self-help application.	2022/10/24
research	2022-1020-01	Life sciences	Epithelial cell-cell communication to facilitate or attenuate the aberrant cell elimination	Part-time Lecturer (retired) Affiliated organization Waseda Institute for Advanced Study	● Optimal cells eliminate suboptimal cells● The mechanism of epithelial cell-cell communication via the interaction between Ligand and Receptor● AltR-targeting treatment enhances or suppresses the elimination	2022/10/24
research	2021-0921-07	Life sciences	Wireless monitoring system for human small signal detection	Professor Faculty of Science and Engineering Graduate School of Information, Production, and Systems	● New principle: the parity-time symmetric resonator circuits ● Add a negative resistance to the detection circuit only● Wireless monitoring of resistance, inductance, and capacitance change	2021/10/08
research	2021-0921-06	Life sciences	Molecule delivering nanotube stamp and stamping system	Professor Faculty of Science and Engineering Graduate School of Information, Production, and Systems	● Delivering substances with different sizes, shapes, and charges into cells ● We have developed a hybrid nanotube (NT) stamp and its stamping system. ● The proposed technology can be used for basic and applied research (regenerative medicine, drug discovery, etc.).	2021/10/08
research	2021-0921-05	Life sciences	Monitor for stress substances	Guest Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Development of compact, easy-to-handle, fast-response silicon transistor sensor (Fig.2)● Simultaneous detection and multifaceted understanding of markers of different origins● Simple detection from minute amounts of saliva and sweat	2021/10/08
research	2021-0921-04	Life sciences	Modulation of Brain Activity by tDCS Effects on Human Decision Making	Assistant Professor (retired) Faculty of Human Sciences School of Human Sciences	● Transcranial direct current electrical stimulation (tDCS) (Figure 1) can increase or decrease neural activity continuously for several hours. ● The activity of the posterior parietal cortex was changed by tDCS during the task of measuring the frequency of choice for each of left and right hand (Figure 2).	2021/10/08
research	2021-0921-03	Life sciences	Epithelial cell-cell communication to attenuate the rejection of suboptimal cells	Part-time Lecturer (retired) Affiliated organization Waseda Institute for Advanced Study	● Optimal cells eliminate suboptimal cells● The mechanism of epithelial cell-cell communication via the interaction between a ligand and a receptor● MHC-I-targeting treatment suppresses the elimination	2021/10/08

type of seeds	number	field	title	researcher	summary	posted
research	2021-0921-02	Life sciences	Epithelial cell-cell communication to facilitate the aberrant cell elimination	Part-time Lecturer (retired) Affiliated organization Waseda Institute for Advanced Study	● Epithelial cells eliminate precancerous cells● The mechanism of epithelial cell-cell communication via the interaction between Ligand and Receptor● AltR-targeting treatment enhances the elimination	2021/10/08
research	2021-0921-01	Life sciences	Activity change in the brain associated with pain relief	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● The oxyhemoglobin levels of lDLPFC became down, i.e., the activity was suppressed, during pain relief.	2021/10/08
research	2021-0921-09	Life sciences	In vitro NASH model with ballooned hepatocytes	Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	● When human fibroblasts and human hepatocytes are co-cultured, collected in sheets using UPCELL and cultured in a high-glycolipid environment, ballooned hepatocytes are induced.	2021/10/08
research	2021-0921-08	Life sciences	Research and development of functional ingredients to protect the liver from alcohol consumption	Professor Faculty of Human Sciences School of Human Sciences	● Identify functional materials that reduce alcohol-induced liver injury. ● Promotes the degradation of acetaldehyde in liver cells. ● Develop a highly concentrated hydrogen water generator that reduces the amount of intracellular acetaldehyde.	2021/10/08
research	2020-1012-07	Life sciences	A Method for Chromatic Adaptation Conversion in Skin Disease Diagnosis	Professor Faculty of Science and Engineering	● Renunciation of perfect color reproduction ● Custom setting of reference chromaticity coordinates● Realization of stable white balance	2020/10/27
research	2020-1012-06	Life sciences	Development of novel therapeutic strategy that targets pancreatic β cells for diabetes mellitus	Professor Faculty of Science and Engineering	● Increase in numbers of functional pancreatic β cells ● Creation of pancreatic β-like cells by transdifferentiation	2020/10/27
research	2020-1012-05	Life sciences	High sensitivity DOI-PET detector	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Physics	● Resolution improvement for the PET scaner● 3D measurement of incident gamma rays ● Novel optical sensor of the magnetic field resistant	2020/10/27
research	2020-1012-04	Life sciences	Success in promoting plant growth for biodiesel	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● We Focused on Camelina its oil from seeds used as a raw material for biodiesel.● Succeeded in enhancement of seed production by heterologously expressing the high-speed Chara-Arabidopsis chimeric myosin XI gene in Camerina	2020/10/27
research	2020-1012-01	Life sciences	Ultrasensitive antigen test for COVID-19	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● We propose a de novo antigen test for diagnosing COVID-19 using the combination of sandwich ELISA and thio-NAD cycling. Our test takes advantage of the spike (S1) proteins specific to the SARS-CoV-2 virus.	2020/10/27
research	2019-1021-07	Life sciences	Development of cosmetic products targeting cell endogenous activation	Professor Faculty of Human Sciences School of Human Sciences	● Degradation of abnormal proteins by enhancing autophagy.● Elimination of damaged mitochondria by mitophagy reduces the source of active oxygen.● Intrinsic protection from aging or environmental stress by increasing cellular stress response system	2019/10/21
research	2019-1021-08	Life sciences	Method for monitoring the treatment effect of Myeloproliferative neoplasms	Professor Faculty of Science and Engineering	● Usage of the fluorescence-dye-labeled probe exhibiting fluorescent intensity as a function of the amount of V617F allele● *JAK2* V617F allele burden can be quantified equivalent to the results by next- generation sequencing (NGS)● Available for the monitoring of slight increase/decrease of V617F allele burden	2019/10/21
research	2019-1021-06	Life sciences	Ultra-sensitive and high-performance biomolecule detection method	Guest Senior Researcher Faculty of Science and Engineering	● Conversion of detection principle from analog method to digital method.● Development of ultra-sensitive detection probes capable of single molecule detection.● Practical application of quantitative technology based on high-speed single molecule digital counting.	2019/10/21
research	2019-1021-03	Life sciences	Probes for theranostics that target denatured collagen	Professor Faculty of Science and Engineering	● Remarkable improvement of affinity to target by cyclization of CMPs● Optimization of cyclic CMP (cCMP) design using structure-activity relationship	2019/10/21
research	2019-1021-02	Life sciences	Evaluation and identification of calorie restriction mimetic molecules	Professor Faculty of Human Sciences School of Human Sciences	● We developed the screening system for the identification of calorie restriction mimetics.● This system is unique, rapid and easy to use. ● This system is applicable both in vitro and *in vivo*.	2019/10/21
research	2019-1021-01	Life sciences	Development of new diagnosis using ultrasensitive ELISA	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● For this purpose, we have developed a de novo method using a sandwich ELISA combined with thio-NAD cycling.	2019/10/21
research	2018-1123-09	Life sciences	Ear thermometer for heat illness prevention	Professor (retired) Faculty of Human Sciences	● Health risks associated with hot climate during labor and sports are increasing. ● However, there are no effective bio-sensing devices to predict or judge such personal risk. ● We need to develop an accurate and simple device evaluating deep body temperature for this purpose.	2018/11/30

type of seeds	number	field	title	researcher	summary	posted
research	2018-1123-08	Life sciences	A method of isolating reporter cells by a highly sensitive trap vector system	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● To highly express the fluorescent reporter protein in isolation, GAL4-UAS system was employed.	2018/11/30
research	2018-1123-07	Life sciences	Natural compounds affecting cell differentiation	Professor Faculty of Science and Engineering	● In vitro neural differentiation model using embryonic stem cell● Search for active compounds from marine organisms and foods	2018/11/29
research	2018-1123-06	Life sciences	Chemo-enzymatic amide synthesis	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	● A novel chemo-enzymatic reaction for the amide synthesis. ☒ Enzymatic reaction: activation of the carboxyl group of the substrate. ☒ Chemical reaction: nucleophilic substitution reaction to be various amides.	2018/11/29
research	2018-1123-05	Life sciences	Biological Implant Material with Bone Seeking	Guest Senior Researcher (retired)	● Control surface morphology of implant in nanoscale. ● Combination of large and small nanostructures which has different functionalities, respectively.● Nanostructure formation process applicable for curved surfaces.	2018/11/29
research	2018-1123-04	Life sciences	Artificial blood vessel unit for fabrication of artificial organ	Professor Faculty of Science and Engineering School of Creative Science and Engineering	● Luminal structure was fabricated by using titanium wire and hydrogel. ● Artificial vascular structures are created by using vascular endothelial cells adhered titanium wire. ● Artificial vascular structures were perfused with culture medium.	2018/11/29
research	2018-1123-03	Life sciences	Reproduction model device for cerebral aneurysm	Guest Researcher Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	● Establishment of a novel ex vivo technique of reproducing cerebral aneurysm.● Reproduce diseased state of the arteries from healthy by hemodynamic loading.● Reproduce degenerative change of arteries due to aberrant hemodynamics.	2018/11/28
research	2018-1123-02	Life sciences	An innovative technology for plant size enhancement and control:Artificial control of the cytoplasmic streaming	Professor Faculty of Education and Integrated Arts and Sciences School of Education	● Cytoplasmic streaming, the common transport system in the plant, was accelerated artificially.● Myosin XI motor domain was genetically exchanged by that of Chara myosin XI, which is the fastest motor protein.	2018/11/28
research	2018-1123-01	Life sciences	Cellulose Nanofibers for Application in Regenerative Medicine ～ Fabrication of Engineered Tissues by Cell Culture in Thixotropic Gel ～	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Cellulose nanofiber (CNF) hydrogel is used for cell culture scaffold (Fig. 1).● Prepare coaxial two-layer long fibrous gel with microfluidic device (Fig. 2,3).● Cells are embedded in the CNF gel of the core layer and 3D cultured to fabricate long muscle and vascular tissues (Fig. 2,4).	2018/11/28
research	2018-1026-04	Life sciences	Highly Durable Interdigitated Electrode with Dense CNT Forests	Junior Researcher (retired) Affiliated organization Waseda Institute for Advanced Study	● Highly-sensitive and highly-durable IDE with dense CNT forests directly grown on electrodes at low process temperature (	2018/10/30
research	2018-1026-03	Life sciences	Patterning Growth of Carbon Nanotube Forests on Metal Electrodes	Junior Researcher (retired) Affiliated organization Waseda Institute for Advanced Study	● Patterning growth of dense CNT forests on metal electrodes was demonstrated combining with conventional lithographies (UV lithography or e-beam lithography).	2018/10/30
research	2018-1026-02	Life sciences Nanotechnology / Materials	Nanosheet for detecting deformation and motion of biological tissue (soft materials)	Guest Researcher (retired)	● Polymer nanosheets for the substrate has high flexibility.● Dots were marked on nanosheet at regular intervals.● Motion or deformation were estimated from position information of dots.	2018/10/30
research	2018-0927-08	Life sciences	Development of a device and algorithm for prevention of exertional heat stroke	Professor (retired) Faculty of Human Sciences	● We have developed devices monitoring deep body temperature on fields, ● the algorithm predicting the risks, using heart rates and body temperature data. ● Collecting the data and personal log will give us more accurate information.	2018/09/27
research	2018-0927-07	Life sciences	Chemical Health Monitor Kind to Skin	Guest Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Sticking a tiny sensor module on the skin using a polymer nanosheet. (Fig.2(a)) ● Silicon pH (ion) sensor suitable for a mass production and ultra small reference electrode. (Fig.2(b)) ● The sensors are driven without a battery directly by near-field communication (NFC). (Fig.2(c))	2018/09/27
research	2018-0927-06	Life sciences	Microfiber Scaffold for Effective Induction of an Engineered Tissue by Introducing Conductive Polymer in the Core Layer	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Microfiber scaffold can align myoblasts to effectively form myotube (Fig. 1).● Electric potential, promotes muscle tissue formation; highly conductive polymers (ex. PEDOT/PSS) are useful as the scaffold materials. ● We have developed the microfiber having PEDOT/PSS in the core layer (Fig. 2).	2018/09/27
research	2018-0927-05	Life sciences Nanotechnology / Materials	Development of magnetic nanoparticles for cancer care	Senior Research Professor (retired)	● Magnetite nanoparticles with the mean size tuned in the range of 10 to 40 nm● High dispersibility of nanoparticles (modified with amine) in aqueous solution● Use of cells containing nanoparticles in the treatment and diagnosis of cancer	2018/09/27

type of seeds	number	field	title	researcher	summary	posted
research	2018-0927-04	Life sciences	Drug screening targeting intracellular accumulation of abnormal proteins	Professor Faculty of Human Sciences School of Human Sciences	● Elucidation of the molecular mechanisms for the intracellular accumulation of abnormal proteins (Fig. 2). ● Development of screening technique targeting protein quality control systems.	2018/09/27
research	2018-0927-03	Life sciences	Directed evolution of proteins by using novel engineering of genetic codes	Professor Faculty of Science and Engineering	● Our directed evolution creates a protein which has only one modification site.● The key for the above evolution is our “simplified genetic codes” which do not encode Lysine. ● Our ”moving average genetic code” keeps increasing of a desired property of proteins during directed evolution.	2018/09/27
research	2018-0927-02	Life sciences	An artificial collagen-like material based on triple helix-forming peptides	Professor Faculty of Science and Engineering	● Polymerization of the collagen-like peptides by cross-linking via disulfide bonds● Functionalization by incorporating bioactive sequences derived from native collagen● Process into a transparent membrane by a drying/rehydration of the gel	2018/09/27
research	2018-0927-01	Life sciences Nanotechnology / Materials	Technology to Manipulate Cellular Functions Using a Nano-heater : Cellular Thermodynamics Engineering	Junior Researcher (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	● We proposed the method that allows quantitative heating at the nanoscale in live cells with monitoring the temperature change on the heat spot (Nano Heater).	2018/09/27
research	2016-1024-08	Life sciences	Amyloidß Detection System using CHRNA7 Fragments	Senior Researcher (retired) Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	● We narrowed down the binding region of CHRNA7 to Aß.● The methods to detect Aß using the purified GST-CHRNA7 fragments.● We already confirmed the binding of Aß and the CHRNA7 fragments.	2016/10/24
research	2016-1024-07	Life sciences	New Therapy of Precocious Puberty and Reproductive Dysfunction by Means of GnIH, a Novel Neurohormone	Professor (retired) Faculty of Education and Integrated Arts and Sciences School of Education	● Discovery of a novel neuro hormone(GnIH) (Fig.1)● Elucidation of the molecular mechanism of the GnIH/GNIH action to control the reproductive function - Central precocious puberty (CPP) that GnIH/GNIH functional decline leads (Fig.2) - Central reproductive dysfunction (CRD) that hyperfunction of GnIH/GNIH leads (Fig.3)	2016/10/24
research	2016-1024-06	Life sciences	Collagen-like Peptide Polymer with Gelating Property	Professor Faculty of Science and Engineering	● Disulfide-crosslinked polymer of triple-helical peptides (Fig. 1)● The material can be shaped into hydrogels and films etc. (Fig. 2).● Cell behaviors can be regulated by introducing signaling sequences (Fig. 3).● Cell behaviors can be regulated by altering the stiffness of the gel (Fig. 4).	2016/10/24
research	2016-1024-03	Life sciences	Self-driven Perfusion Culture System Using the Paper-based Double-layered Scaffold	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● The double-layered scaffold consisting of a paper for medium perfusion and electrospun gelatin microfibers for cell adhesion is developed (Fig. 1). ● Self-driven, stable, and constant perfusion of the medium has been achieved by using both capillary action and siphon phenomenon of the paper-layer (Fig. 2). The flow rate is controllable just by changing the height levels.	2016/10/24
research	2016-1024-02	Life sciences	On-Chip Quasi-in vivo Assay Technology for Predictive Drug Discovery and Diagnostics	賢二 安田 教授 理工学術院 先進理工学部	● We have developed an on-chip quasi-in vivo technology consisting of, (1) non-invasive cell sorting, (2) 3-D cell network formation, (3) non-destructive single cell dynamics measurement.	2016/10/24
research	2016-1024-01	Life sciences	High-speed Tissue Dissection System for Spatial Omics Analysis of Tissue	Associate Professor Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● The automated system for rapid tissue microdissection ● Tissues are automatically dissected and transferred into plate within 8 min for 96 sampling sites.	2016/10/24
research	2015-1023-05	Life sciences	Protein crystallization using membrane separation method	Assistant Professor Faculty of Science and Engineering School of Advanced Science and Engineering	・ Protein solution is concentrated by using ultrafilter・ Concentration speed is controlled optionally by pressure control ・ Separation and collection of proteins are very easy	2015/10/23
research	2015-1023-04	Life sciences	Method for determining the heat treatment on meat	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	To determine the heat treatment on meat by evaluation of heat denaturation of protein using Raman spectroscopic analysis.	2015/10/23
research	2015-1023-03	Life sciences	Novel antimicrobial peptides	Professor Faculty of Science and Engineering	Novel antimicrobial peptides which form triple-helical structure and contain Arg cluster in the N-terminal region and disulfide bonds in the C-terminal region.	2015/10/23
research	2015-1023-01	Life sciences	Analytical systems of homologous recombination in the reconstituted chromatin	Guest Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	We established the in vitro systems to evaluate the RAD51-mediated or DMC1-mediated homologous recombination reaction using reconstituted chromatin substrates.	2015/10/23
research	2015-1022-04	Life sciences	Drug for epigenomic disruption caused by hyperglycemia	Professor Faculty of Science and Engineering	Does hyperglycemia cause a change of epigenome? A compound which prevents hyperglycemia-induced epigenomic aberration, could be a novel drug for diabetes associated with various diseases.	2015/10/23

type of seeds	number	field	title	researcher	summary	posted
research	2015-1022-03	Life sciences	Neuronal differentiation inducer	Professor Faculty of Science and Engineering	・ A series of novel ageladine A derivatives,which has a specific activity on the neuronal differentiation	2015/10/23
research	2015-1022-02	Life sciences	High-throughput screening system with cultured cell lines	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	・ Cells are cultured in various conditions (growth factor, extracellular matrix, etc.) after retroviral induction of target genes, and evaluated by cell growth/migration/invasion and malignant transformation. ・ Optimization for 96-well culture plates enabled high-throughput functional assays.	2015/10/23
research	2015-1022-01	Life sciences	Development of Functional foods regulating circadian clock system	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	・ Screening of food materials on rhythm in cells・ Select from materials based on Amp, Phase, Period・ Screening of food material for BF or Dinner on rhythm・ Confirmed by clock gene mRNA in mice & human	2015/10/23
research	2015-0303-02	Life sciences	Evaluation Method for Static Stretching	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Quantitative evaluation of muscle tone・Detection of muscle hypotonicity・Simple indentation test	2015/03/03
research	2015-0303-01	Life sciences	Robotic System for Breast Cancer Diagnosis and Treatment	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Measuring a location and stiffness of a cancer as palpation ・Inserting a needle for treatment accurately into a cancer by compression using palpation probe to stabilize the cancer	2015/03/03
research	2015-0302-07	Life sciences	Development of Support System for RFA	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Research toward precise cancer ablation by using robot technology ・Development of sensing method and estimation method for physical quantity related as ablation during operation	2015/03/02
research	2015-0302-06	Life sciences	Visual Assistance System for Endoscopic Surgery	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Visualization of anatomy in a way it is normally unachievable・Constructed with combination of traditional endoscopes	2015/03/02
research	2015-0302-05	Life sciences	Robot Control using Muscle Bulge Movement	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Nobel robot control method using a new bio signal・Estimate the operation quantity using muscle bulge movement	2015/03/02
research	2015-0302-04	Life sciences	False Step Prediction System and False Step Prevention System	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Prediction of false step・Wearable device with comfortable wear feeling	2015/03/02
research	2015-0302-03	Life sciences	Haptic Interface for Navigation of the Visually Impaired	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・A haptic interface for navigation・The generated centrifugal force using two eccentric weights is transmitted the user・It is possible to indicate in any direction	2015/03/02
research	2015-0302-02	Life sciences	Robot of Gait Training Assisted by Physical Therapist	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Robot of gait training assisted by physical therapist・Modeling based on assisted movement ・Control robot adapted to individual difference of hemiplegia patient	2015/03/02
research	2015-0302-01	Life sciences	Walk Rehabilitation Support Robot for Symmetrizing Stance Phase	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	・Walk rehabilitation support robot for symmetrizing stance phase・Real-time induction of stance phase・Split belt treadmill with differential velocity	2015/03/02
research	2011-0427-01	Life sciences	The synthesis of high yield hydroxyaspartic acid and its use in antitumor drugs	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	In this research seed we succeeded in synthesizing hydroxyaspartic acid, with 100% yield, through site-specific addition of hydroxyl groups to aspartic acid in few steps, by making use of the biological reactions of enzymes.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2011-0427-02	Life sciences	The emission of white light through enzyme hydration of 2-naphthoic acid	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	Using cytochrome P450 (enzyme) on 2-naphthoic acid to add a hydroxyl group enables the easy, one-step synthesis of a compound that emits white light.We have also synthesized compounds that emit blue light, and there is the potential to synthesize compounds that emit a variety of other colors.	2014/05/21
research	2011-0427-03	Life sciences	A method of freely synthesizing hexapeptides from peptides	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	For example, to synthesize amino acids A and B, a method of implementing biocatalysts (enzymes) enables the synthesis of specific structures only (e.g., when AA, AB, BA and BB combinations are possible, only AB may be selectively synthesized). The peptide too, gains one site-specific structure.	2014/05/21
research	2011-0517-01	Life sciences	Investigation of prenatal care through noninvasive diagnosis and analysis	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Using a SQUID (superconducting quantum interference device), which is a high sensitivity magnetic sensor, to diagnose and analyze the mother's electrocardiograph can shed light on the level of relaxation or stress in the fetus through correlation between the mother and the fetus.The effects of prenatal care have so far not been scientifically elucidated, but this technology may shed light on what kind of care is beneficial.	2014/05/21
research	2011-0517-02	Life sciences	Visualization of the brain's response to stimuli (smell) in a murine model using noninvasive measuring of biomagnetism	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	The SQUID (superconducting quantum interference device), which is a high sensitivity magnetic sensor, is able to measure subtle magnetic fields (magnetoencephalographs) created by nervous activity, and it is not hindered by the skull. This allows the accurate and individual tracking of nervous activity. For example, comparing the magnetoencephalographs of odorant receptor deficient murine models that do not respond to odorant stimuli (knockout mice), with those of normal mice, allows accurate visualization of cerebral nerve activities in response to chemical odorant stimuli.	2014/05/21
research	2011-0517-03	Life sciences	Comparison of a murine model with humans using noninvasive measuring of biomagnetism, and its application in heart disease diagnosis	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	We can provide a method of early heart disease detection that combines life science techniques with SQUID* measurements.For example, we can create a murine model of myocardial infarction (a knockout mouse), and take magnetocardiographs using SQUID from birth until the onset of myocardial infarction, and then until it dies, to ascertain the changes that occur in the magnetocardiographs with the onset of myocardial infarction. Moreover, comparing them with the results of autopsies will allow us to make diagrams to draw correlations between the states of the disease and the magnetocardiographs.* SQUID (superconducting quantum interference device): A high sensitivity magnetic sensor. It is able to measure weak magnetic fields (magnetoencephalographs and magnetocardiographs) generated by neurotransmissions (brain activity) or movement of the myocardium.	2014/05/21
research	2011-0517-04	Life sciences	Comparison of a murine model with humans using noninvasive measuring of biomagnetism, and its application in brain disease diagnosis	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	SQUID (superconducting quantum interference device), which is a high sensitivity magnetic sensor, is able to measure weak magnetic fields (magnetoencephalographs) generated by neurotransmissions (brain activity) without being obstructed by the skull. For example, using SQUID to take measurements of the area around a brain tumor that has been found through MRI, enables a more accurate ascertainment of its position and state. This not only gives the surgeon more information before an operation, but it can also be used to obtain informed consent regarding side effects after surgery.	2014/05/21
research	2011-0906-05	Life sciences	Natural marine chemical compounds as materials for drugs As a tool in chemical epigenetics	Professor Faculty of Science and Engineering	Samples of marine organisms: Over 1,500 species, including marine sponges, coelenterates, protochordates, echinoderms, and mollusks.A diverse range of sampling areas: Japan (Ryukyu Islands, coastal Kyushu, Izu Islands, Sado Island, coastal Sanriku, Kuril Islands), Micronesia, Vietnam.Natural marine chemical compounds: A library of new and already known natural marine chemical compounds.We are targeting the library of chemicals extracted from marine invertebrates to carry out screening for antibacterial and antimold chemicals, growth inhibitors that work on various cancer cells, chemicals that inhibit angiogenesis and various enzymes, cytotoxins, bacteria with resistance to multiple drugs, etc. Over 100 varieties of new chemical compounds that clearly stimulate biological activity have so far been identified.	2014/05/21
research	2011-0906-06	Life sciences	New anti-Leishmania agent	Professor Faculty of Science and Engineering	“Cristaxenicin A,” a new chemical compound with anti-Leishmania properties	2014/05/21
research	2011-0909-05	Life sciences Manufacturing Technology	A durability testing device for stents and a method of evaluation	Professor Faculty of Science and Engineering Graduate School of Advanced Science and Engineering Cooperative Major in Advanced Biomedical Sciences	We developed a testing device that could accurately simulate the stress environment of the area where the stent is inserted. The development of a system that takes into account the application of stress in the form of a combined twisting and stretching force, and the mechanical properties of the blood vessel model, has enabled the standardized, comprehensive evaluation and tracking of deformation in stents of a variety of designs.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2011-0909-06	Life sciences Manufacturing Technology	Acellularization of heart valves	Professor Faculty of Science and Engineering Graduate School of Advanced Science and Engineering Cooperative Major in Advanced Biomedical Sciences	One of the ways of prolonging the life of tissue valves is to not treat them chemically, and use acellular tissue from porcine heart valves. A unique method of microwave irradiation combined with a simulated in vivo environment (controlled surfactant flow and pressure through pulsation) leaves the tissue unda maged, enabling the creation of acellular tissue that retains high strength. We also have technology for cultivating human endothelial cells on the surface of acellular porcine heart valves, enabling transplants with even less chance of rejection.	2014/05/21
research	2011-0915-01	Life sciences	Intracellular molecular dynamic analysis	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	Using random scan two-photon excitation microscopy, we can measure the movement of intracellular molecules. In particular, the calcium ions (Ca2+) and phosphoenzymes, receptors and other proteins involved in the synapse plasticity of neurons are the target for this analysis.	2014/05/21
research	2011-0915-02	Life sciences	Diagnostic method for chronic myeloproliferative diseases - method for quantitatively analyzing the JAK2 genetic mutation -	Professor Faculty of Science and Engineering	We have a method of quantitatively analyzing the JAK2 genetic mutation. Using a fluorescent probe, it is possible to diagnose cMPD quickly and accurately.	2014/05/21
research	2011-0915-03	Life sciences	New isolation and culturing method for microorganisms	Professor Faculty of Science and Engineering	New high-throughput in situ culturing tools and isolation and culturing techniques for useful microorganisms in the environment. It is possible to apply these methods to environments such as in underground and in water and obtain many new bacteria in one go. Because mass transfer through a hollow-fiber membrane is possible, we can perform isolation and culturing while still in the natural environment. (See figure)	2014/05/21
research	2011-0915-04	Life sciences	New pharmacological effects of thalidomide on neurons	Senior Researcher (retired) Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	The enantiomers, derivatives and metabolites of thalidomide are being analyzed to determine the various mechanisms of action in neurons by which they cause differences in pharmacological effect.	2014/05/21
research	2011-0930-01	Life sciences	Drug development based on collagen	Professor Faculty of Science and Engineering	●Supramolecular materials having collagen-like triple-helical structure●Library of collagen-like triple-helical peptides (approximately 800 types)●Screening methods for collagen biological polymer bonding inhibitor compounds: (establishment of 384-well plate, high-throughput screening system)	2014/05/21
research	2011-1027-01	Life sciences	Artificial red blood cell production method	Guest Senior Researcher (retired) Research Council (Research Organization) Organization for University Research Initiatives	Production method for artificial red blood cells with the hemoglobin that binds to oxygen encapsulated in a lipid membrane.Demonstrated benefits include: (a) No blood types, (b) viruses and other infection sources are removed, (c) stable at room temperature for at least two years, (d) broken down and excreted by the metabolic system even when given in large amounts, (e) uniformly dispersed in plasma, to supply oxygen to the peripheral tissues where red blood cells cannot reach, (f) is safe and has the same oxygen delivery effects as red blood cells as a resuscitative fluid to treat hemorrhagic shock.	2014/05/21
research	2011-1028-01	Life sciences	Elucidating the mechanisms of intrahepatic metabolism control and disease caused by its failure	Professor Faculty of Science and Engineering	We have findings about the central molecule involved in the low-oxygen response mechanism in cells, hypoxia inducible factor (HIF)-1. We discovered that failure in this response in hepatic parenchymal cells leads to the onset and development of alcoholic and non-alcoholic fatty liver. In particular, we clarified that failure of fatty acid metabolism control by HIF-1 is involved in the onset mechanism for alcoholic fatty liver disease. Research is also being extended into the involvement of HIF-2, the HIF isoform.	2014/05/21
research	2011-1031-01	Life sciences Manufacturing Technology	Biofeedback-type perception support robot technology for cognitive-neuro rehabilitation	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Accumulation of developmental knowledge and clinical data on perception support robot technology (RT) to aid in the rehabilitation of hemiplegic patients. A mechanism devised for communicating the ground conditions under the paralyzed foot to the healthy side by a unit that displays pressure level, attached to the healthy side arm or back. By comparing the ground contact conditions on the paralyzed side, felt through the healthy side with the mistaken image of the whole body held by the patient, the patient can realize him or herself, the mismatch in body perception. With this new mechanism through which the robot draws out independence, brain plasticity is encouraged, making autonomous and efficient rehabilitation possible.	2014/05/21
research	2012-0319-01	Life sciences	Development of hemiplegic gait simulation tools for educational purposes	Professor Faculty of Science and Engineering School of Creative Science and Engineering	This project is drawing attention to the gaps between movement and sensation experienced by those with hemiplegia, such as the feeling of being unable to move even though the patient wants to move the body parts, or the feeling that body parts are moving on their own. The project is developing methods to allow those in good health to experience such subjective sensations in a non-invasive and safe way.	2014/05/21
research	2012-0712-07	Life sciences	Field Effect Transistor Sensor	Senior Research Professor (retired)	Transistor-type sensing device fabricated using semiconductor microfabrication technology.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2013-0130-03	Life sciences	Technology for screening anti-aging substances	Professor Faculty of Human Sciences School of Human Sciences	We have established a system of using cultured cells for screening and transgenic mice to examine and evaluate substances that have the equivalent effect in anti-aging as calorie restriction. Pro-longevity transcription factor binding sites (DFCR-RE: dwarfism and calorie restriction-response element) are incorporated into upstream regions of the reporter gene (secreted alkaline phosphatase) to indirectly measure the stimulation of transcription factors bound to these sites. We also carry out analyses with a focus on neuropeptide Y in the metabolic pathways of anti-aging effects.	2014/05/21
research	2013-0130-04	Life sciences	Deficient DNA damage response and progeria	Professor Faculty of Human Sciences School of Human Sciences	Through the functional analysis of multiple proteins involved in the copying, repair and recombination of DNA identified as being the genetic cause of progeria, we are carrying out research into the breakdown and accelerated aging of the mechanism that maintains genomic homeostasis through DNA damage stress.	2014/05/21
research	2013-0130-06	Life sciences	Voice synthesizing technology based on human vocal cords	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	Analyzing the mechanical and acoustic mechanisms in the generation of voice in communicationAnalyzing the feedback from the sense of hearing and touch to the vocal system, and elucidating the mechanism for generating the quality of voice in emotional or ill people.	2014/05/21
research	2013-0130-07	Life sciences	Preventing external injuries and rehabilitation centered on the knee joint	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	We are elucidating the mechanisms behind external injuries to the knee joint (ligament, hamstring muscle, etc.), and we have knowledge in diagnosis, treatment, rehabilitation and prevention.	2014/05/21
research	2013-0130-08	Life sciences	Evaluating sports equipment based on knowledge in sports medicine	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	Analyzing through observation of the dynamics of bones and joints using cineradiography, and evaluating making use of knowledge in sports medicineSports we target mainly are soccer (junior and women’s), judo, basketball, rugby, golf, etc.	2014/05/21
research	2013-0130-09	Life sciences	Elucidating the state of health problems centered on backaches, and proposing methods of prevention (exercise treatment)	Professor Faculty of Sport Sciences School of Sport and Sciences	We are elucidating the mechanisms behind injuries in the back region, including the spine and surrounding areas (hip joint, groin region, shoulder girdle), and we have knowledge in diagnosis, treatment and prevention. We target mainly swimmers (swimming, water polo, diving, synchronized swimming, etc.)	2014/05/21
research	2013-0130-10	Life sciences	Coaching skills based on body image research, and sports promotion activities based on them	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	We are measuring and analyzing brain activity during “body imaging” in which people recall movements without actual physical movement, and the gap between what people consider to be the ideal movement and reality. Noninvasive brain imaging and biomechanical measurements are carried out specifically on somersaults and kicking motions, motions that involve cutaneous sensations, and movements using tools.	2014/05/21
research	2013-0130-11	Life sciences	Analyzing sports skills	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	In batting and pitching, a variety of analyzing methods such as the use of full body motion capture and force plates to analyze physical performance, bat swings or ball spin, and precision measuring of hand and finger movements and visual cognitive motion are used to evaluate skills with a focus on reproducibility.	2014/05/21
research	2013-0130-12	Life sciences	The scientific basis and the future possibility for ischemic resistance training	Professor Faculty of Sport Sciences School of Sport and Sciences	Takarada et al. have previously shown that low-intensity resistance exercise combined with vascular occlusion induces a marked hypertrophy and concomitant increase in strength, even if the exercise load is much lower than that expected to induce muscular hypertrophy.	2014/05/21
research	2013-0130-13	Life sciences	Sports and sleep	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	Regarding the effect of physical exercise on sleep at night, we carry out research into the kind of exercise that is appropriate for improving sleep.We carry out research into the potential of exercise in treating depression, to see if it can improve people’s mood.	2014/05/21
research	2013-0130-14	Life sciences	The brain mechanism that handles operational errors and motor learning	Professor Faculty of Sport Sciences School of Sport and Sciences	The activity of the anterior cingulate cortex is measured from the error-related negativity. The process of learning though warnings and rewards is analyzed through brain waves, brain imaging, TMS (transcranial magnetic stimulation), eye-trackers, etc.	2014/05/21
research	2013-0130-15	Life sciences	Evaluation of comfort through measurement of brain activity	Professor Faculty of Human Sciences School of Human Sciences	By measuring blood flow in the brain in real time through optical topography (NIRS), we can provide an objective, numerical index of the state of comfort or emotions. This will assist in the search for more effective stimulatory conditions and designs.	2014/05/21
research	2013-0130-16	Life sciences	Ways to alleviate mood disorders through attention training	Professor Faculty of Human Sciences School of Human Sciences	Focusing on “rumination = repeated recalling of past events and being tormented by them,” often seen in depression, we are developing a form of neurobehavioral therapy based on attention training to alleviate rumination. We can provide treatments that suit the symptoms of the patient through use of fMRI and optical topography to ascertain changes in associated brain regions.	2014/05/21
research	2013-0130-17	Life sciences	Interfaces that make use of the characteristics of cutaneous sensation	Professor Faculty of Human Sciences School of Human Sciences	Designing an information communicating device for the visually impairedAnalyzing the characteristics of a variety of tactile sensing such as differences in the surface area, the layer structure and hardness (Young’s modulus), slipperiness, etc., and proposing devices that make use of these characteristicsAnalyzing the upper arm extension illusion caused by vibration stimuli.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2013-0130-18	Life sciences	The development of facilities and equipment based on analyses of the motor functions of the legs	Professor Faculty of Human Sciences School of Human Sciences	Analyzing the effects of tactile paving and inclined obstacles on the walking of healthy people, the elderly and injured people (an examination of stress or danger of tripping while walking).Elucidating the mechanical properties of the structure of the foot (e.g., the arch) while walkingEvaluating and proposing ways to provide information to the visually impaired with a focus on the properties of floor material.	2014/05/21
research	2018-1026-01	Information Frontier	Innovation of Data-driven Society based on Next-generation Information Processing “Quantum Annealing”	Guest Senior Researcher Research Council (Research Organization)	● An algorithm of clustering analysis using quantum annealing has been proposed.● Algorithms of combinatorial optimization problems using quantum annealing have been proposed.	2018/10/30
research	2011-0908-01	Information	LSI design technology for integrated systems that realizes ultralow energy	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	We are implementing a generalized rule that remains consistent throughout higher and lower processes by creating an abstraction model based on new concepts of “strong coupling” and “weak coupling” in regard to the three factors of functional modules, memory, and control that make up LSI.We are also able to establish LSI design technology that achieves an “LSI synthesis algorithm that integrates high and low points of low energy” through mutual harmonization of the design process in accordance with the implemented rule, without adhering to traditional hierarchical design processes.	2014/05/21
research	2011-0908-02	Information	Elucidating the vulnerability of IC cards and establishing countermeasures	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	In the scan path design, “scan registers” are incorporated randomly into the LSI, so it was originally secret information that only the designer knew.We demonstrated that it is possible to decipher the cryptographic processing of LSI in IC cards by making use of the regularity of the outputted data order due to the fact that the relative positions of FFs (flip-flops) used in a scan chain remain unchanged despite them being connected randomly. As a result of this, we have succeeded in deciphering typical encryption standards that were thought to be impossible to crack, including the AES, RSA cryptosystem, and elliptic curve cryptography (ECC).	2014/05/21
research	2011-0913-01	Information	System for the handwritten input of mathematical expressions: MathBox	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Computer Science and Engineering	The symbols in expressions can be recognized using existing character-recognition techniques, but the recognition of expression structures is difficult, which caused a drop in the accuracy of expression recognition. Accordingly, the pattern of the structure is predicted and a space (=MathBox) is displayed in advance for the user to input the expression, through which the structure is easily recognized and accuracy increased. In addition, we have succeeded in simplifying the correction of misrecognitions by providing example symbols that could possibly be input in the specified space.	2014/05/21
research	2011-0913-02	Information	Creation of effective thumbnails based on handwritten notes	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Computer Science and Engineering	When displaying lists, thumbnails are effective as details can be ascertained easily from an overview, but with handwritten data, the characters can become too small, resulting instead in an increase in time required.Therefore, reduced thumbnails are produced automatically using snippets extracted of only the important parts, by automatic recognition of expressions emphasized by underlining or capturing in a box, which are enlarged and matched with a diagram. The result allows easy comprehension of the gist of a thumbnail and an increase in search efficiency.	2014/05/21
research	2011-0921-02	Information	Method for speeding up simulations for assessing many-core performance	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	In many-core processors, parallelized programs are executed successively, and from the loops subject to sampling, an estimable interation number for the entire execution cycle is specified within the scope of errors expected based on statistical techniques. By carrying out detailed simulations of only this interation number, it is possible to estimate the execution cycle number with high precision in a short simulation time.	2014/05/21
research	2011-0921-03	Information	Parallelization of multimedia applications (MPEG2 encoders and decoders) by using the OSCAR compiler	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	By using parallelization on a macroblock level in the MPEG2 encoding process, and by using parallelization on a slice level as well as macroblock parallelization in slice processing, it is possible to decrease power consumption as well as improve speed.	2014/05/21
research	2011-0922-02	Information	Methods and equipment for detecting and visualizing level of attention in videos	Guest Researcher (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	This invention involves a method for quantitating details on the viewer during playback, such as “what parts does the viewer tend to look at” and their “level of attention” (existing eye movement measuring devices are also used), and methods, equipment and systems for visualizing time-series statistical probability distribution information, then consecutively updating and delivering accordingly.	2014/05/21
research	2011-0928-01	Information	Highly efficient development technology for highly reliable software systems	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	In order to prevent trouble from occurring in advance, it is vital to improve reliability. Software development goes through multiple stages from basic design to installation, and reliability is gradually lost along the process. To counter this are efforts to improve the reliability of each stage by referring to previous development examples, patternizing and extracting them to use in conducting formal inspections.	2014/05/21
research	2013-0130-01	Information	A note-taking support system for enhancing the feeling of participation in lectures by hearing impaired students	Professor (retired) Faculty of Human Sciences School of Human Sciences	● Research phase: Applied developmental research, research into practical application and commercialization. Digital pen technology called Anoto, developed in Sweden, and a presentation system (OpenSTAGE®) developed by Dai Nippon Printing Co., Ltd. have been used in the support technology.Related press release:http://www.waseda.jp/jp/news11/110804_ant.html	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2013-0130-02	Information	Bulletin board for notifying the location of people (DoorMSNGR) (developed independently)	Professor (retired) Faculty of Human Sciences School of Human Sciences	● Research phase: Applied developmental research, research into practical application and commercializationA bulletin board that allows easy, remote operation (during a meeting or while on a domestic or international business trip) through a smartphone to display the location, and the expected time of return.	2014/05/21
research	2013-0130-05	Information	Turning sports movies into a database, and automatic generation, operations analysis and strategy analysis of secondary movies	Professor (retired) Faculty of Sport Sciences School of Sport and Sciences	Sports movie databases that can be processed on computers (mainly soccer)Developing technology for automatic recognition of tournament movies and the movement of players, the ball, etc., kinematic analyses of hand and leg movements, developing statistical methods of predicting movement, developing skeletal models and skeletal muscle models.	2014/05/21
research	2018-1026-07	Environment Nanotechnology / Materials	Low-cost energy harvester using thin piezoelectric polymer film	Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Making thin membrane by spin coating of polymer. ● Making electrode by ink jet printer.● Poling process is not needed.	2018/11/15
research	2011-0909-03	Environment	Techniques for separation and recovery of CO2 using lithium silicate	Professor Faculty of Science and Engineering School of Creative Science and Engineering	“Lithium silicate” (Li4Si04), developed by Toshiba, is a solid absorption material that can be used repeatedly to absorb CO2 at 600º and release CO2 at over 800º. It has excellent properties, such as higher absorption speed in the presence of water vapor, the ability to separate and recover pure CO2 by thermal swing operation at around 200º, and absorption capacity as high as 30% of its own weight.	2014/05/21
research	2011-0909-04	Environment	Increase in thermal energy quality through chemical regeneration	Professor Faculty of Science and Engineering School of Creative Science and Engineering	While thermal energy can be obtained easily and in large volume, it is irreversible, making it difficult to maintain a high-exergy-rate state. To address this, we can use chemical regeneration. Exergy-lowering processes like vapor reformation and partial oxidation chemically draw out thermal energy at medium-to-low temperature, under which the exergy rate decreases, and through this, the possibility of restoring the high rate is created.	2014/05/21
research	2011-0909-01	Environment Nanotechnology / Materials	Organic light-emitting transistors	Guest Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Construction of transistors rather than diodes, however, allowed large currents to flow and light-emitting phenomena to be obtained. By adjusting the oscillatory conditions, organic lasers become an attainable goal.	2014/05/21
research	2011-0909-02	Environment Nanotechnology / Materials	Manufacture of flexible transistors using inkjet methods	Guest Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	It is possible to fabricate organic transistors onto plastic substrates by the inkjet method, by using a solution in which single walled carbon nano-tubes are dissolved in an organic solvent as the ink.	2014/05/21
research	2011-0914-01	Environment	Ultra lightweight vehicle (ULV)	Professor Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	We have developed an ultra lightweight vehicle (ULV) based on the “more than a bicycle less than a vehicle” concept. By obtaining a registration number in the mini-vehicle category, this vehicle can be legally driven on public streets. At present, development of EVs is being furthered based on social demands, and the Multi-PM (Prime Mover) design concept has been introduced, assuming the use of compressed air, gasoline and hydrogen as energy sources. Another attractive characteristic is its appeal as a “regional revitalizing” business model in collaboration with local small-to-medium enterprises.	2014/05/21
research	2011-0914-02	Environment	Co-benefit based support system and program for environmentally conscious behavior	Professor Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	Differing from the traditional types of HEMS and BEMS, based on automated control of lighting and air conditioning, these are a support system and program for environmentally conscious behavior focused on the lifestyles and work-styles of the individual (resident, worker, etc.). We possess algorithms that allow the effective “visualization” of obtained measurement data, and information provision according to individual attributes (age, gender, etc.) and ease of implementation. It is also possible to incorporate these into existing products and link them with smart meters and more.	2014/05/21
research	2011-0914-03	Environment	Production and network for use of bio-oil from unused woody biomass	Professor Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	We possess knowledge of multi-energy supply which combines production techniques for bio-oil from woody biomass based on rapid pyrolysis, with gasification and bio-oilification (having reached the stage of practical use thanks to joint research with plant manufacturers). Other knowledge we have concerns distribution and storage of bio-oil according to its properties, and its combustibility. Furthermore, efforts to construct a network for its use, including the ideal for a system for provision of raw materials in cooperation with the forest industry are being implemented through a system of collaboration between industry, academia and the government.	2014/05/21
research	2011-0920-01	Environment	Accelerating environmental cleanup processes	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Through detailed solid analysis techniques, including XAFS, and geochemical simulations involving surface complex models and reaction kinetics, it is possible to construct optimal processing processes and set conditions, according to the respective contamination conditions. In proposing an optimal process, we add preprocessing by special pulverization and separation techniques, improve the operation procedures, and reduce amounts of pharmaceuticals and sludge via metal recovery.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2011-0920-02	Environment	Optimization of pulverization and physical separation technology by powder simulation	Professor Faculty of Science and Engineering School of Creative Science and Engineering	It is possible to use a certain type of powder simulation, the Discrete Element Method (DEM) to ascertain in detail, the positions and speeds of each particle in the apparatus, and collision energies between particles and between particles and the walls.	2014/05/21
research	2011-0920-03	Environment	Constructing a process for recycling valuable resources from waste	Professor Faculty of Science and Engineering School of Creative Science and Engineering	A low-environmental-load type valuables recycling process can be proposed, in which, after various types of pulverization are conducted as preprocessing, a number of separation methods are combined, based on specific weight, electrical and magnetic properties, wettability, shape, color, X-ray properties, and physical/physiochemical properties according to target.	2014/05/21
research	2012-0217-01	Environment	Socio-scientific research into administrative processes of environmental policies	Professor (retired) Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	Policies, statutes, environmental science and technology, public opinion, reports in mass media and interests are being examined in a unified manner, and the methods below used to conduct empirical analyses. Results have been obtained in research on themes relating to the administrative process for Japanese global warming policies since the adoption of the Kyoto Protocol, and resource circulation policies. Information can be provided and on-site investigations conducted into domestic policies in Japan.1. Doubts are to be discerned with respect to environmental policies and efforts.2. The social and economic frameworks enveloping the research issues are to be ascertained. (Sites are to be accessed and basic information collected. The structure of problems are to be checked. To this end, the statutes, basic scientific and technological features are to be learned and the governmental, administrative, social and economic situations are to be objectively analyzed and considered.)3. Research is to be framed and trimmed. (The focus of the research is to be narrowed down. The direction of access and framing of the research scope are to be set.)4. Research methods are to be obtained and their methodology set. (Information gathering methods, analysis methods (topic processing, etc.) are to be set and mastered.)	2014/05/21
research	2012-0301-01	Environment	Design process management technology for sustainable buildings	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Analyzing the building design process using a DSM (Design Structure Matrix) and suggesting an optimized design allows the improvement of the current design process. Furthermore, it enables organization of the matters to be considered when introducing a new technology into a building, and the elimination of inefficient design processes such as send backs.	2014/05/21
research	2012-0312-01	Environment	Development of environmental impact evaluation methods by the comprehensive ELP (Environmental Load Point) index	Professor (retired) Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	ELP (Environmental Load Point) is an integrated index in LCA (Life Cycle Assessment), which was developed in these research seeds.The nine problems, “energy drain”, “global warming”, “ozone depletion”, “acid precipitate”, “resource consumption”, “air pollution”, “ocean & water pollution”, “waste disposal problems” and “ecosystem effect” have been categorized into environmental impact areas and categories have been prioritized based on questionnaire surveys conducted by the panel. Using the category priorities as coefficients, an integrated index was developed to enable the assessment of environmental loads in different sectors using standardized units.	2014/05/21
research	2012-0312-03	Environment	Evaluating the amount of carbon storage in natural and artificial forests	Professor (retired) Faculty of Human Sciences School of Human Sciences	Results have already been obtained in estimating the carbon storage capacity of domestic forests in Japan and tropical rain forests abroad, and a methodology has been established for simple estimation of the biomass of plantations in tropical regions. Use of this knowledge enables estimation of the carbon storage capacity of forests.	2014/05/21
research	2012-0313-01	Environment	Environmental impact and policy evaluation centering on Asian countries	Professor Faculty of International Research and Education Graduate School of Asia Pacific Studies	There is a need to grasp each situation from every angle and develop solutions that will allow for the creation of sustainable societies in developing countries while safeguarding the environment. This project will propose methods from among those solutions that utilize the special characteristics of each region. One example of this can be seen in a past example of river water pollution measures in Indonesia. By conducting research related to problem points of decentralized environmental management systems and on the ideal for effective environmental policies, it was possible to work on the construction of relations between social actors, conduct discussion toward the creation of action plans for the improvement of environmental management systems, and make proposals toward action. A method was used to incorporate the various opinions of the community by organizing discussion into the following two formats. The method allowed for the selection of the appropriate discussion body for each topic and management of discussion.Round Table (RT) - A variety of opinions were incorporated through this organizational format, which brought together provincial governments, municipal governments, chambers of commerce, regional universities, environmental NGOs, and other groups with the objective of conducting participatory research engaging social actors - governments, corporations, and citizens - and building social environmental management capabilities. Steering Committee (SC) - this committee comprises the central government, chambers of commerce, the University of Indonesia, and other stakeholders, brought together to discuss the ideal for national systems and policies meant to support local initiatives.	2014/05/21
research	2012-0315-01	Environment	Evaluation of the global warming reduction functionality of forests	Professor (retired) Faculty of Human Sciences School of Human Sciences	This project will evaluate the global warming reduction functionality of forests within developing countries. The project will investigate the cause of deforestation and forest degradation and the impact of global warming, and implement measures aimed at realizing a low-carbon society.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2012-0321-01	Environment	Micro heat pipes to turn nano fluid into hydraulic fluid	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	This project will improve heat conductivity by using a hydraulic fluid containing silver nano-particles in a micro heat pipe.	2014/05/21
research	2012-0614-01	Environment	Environmentally-conscious product and waste product business management	Professor Faculty of Commerce Graduate School of Commerce	This project proposes methodology to scientifically develop market analysis and product management methods for environmentally-conscious products, as well as the creation of new waste product processing businesses.	2014/05/21
research	2012-0619-01	Environment	A latent heat storage system	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	This project is for the creation of a latent heat storage system using thermal energy (heat in particular) set in motion along with transfers between liquid and solid states.	2014/05/21
research	2012-0619-02	Environment	System for the elimination and collection of substances in wastewater	Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	This project uses crystallization phenomena for a system that disposes of and collects the targeted substances in a discriminating and safe way while making considerations for the characteristics of waste water, in that it has a low concentration of many materials.	2014/05/21
research	2012-0619-03	Environment	Technology for evaluation, exploration, and collection at final disposal of waste sites for urban mines	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	This technology elucidates the types and quantity of metals buried within final disposal of waste sites, as well as the presence of minerals, and specifies which metals would be beneficial to collect. The technology makes it possible to use electric detection to measure zones where metals are distributed.	2014/05/21
research	2012-0619-04	Environment	Energy-saving and low-cost purification material development using high-quality regional soil	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	Usage of volcanic soil as environmental purification materials.	2014/05/21
research	2012-0625-01	Environment	Self-filling concrete using sea water and sea sand	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	This project developed self-filling concrete using sea water as mixing water, sand as aggregate, and a new admixture that can provide these materials with superior fluidity and appropriate viscosity (A high-performance AE water reducing agent with a one-pack type thickener containing salt).	2014/05/21
research	2012-0627-01	Environment	Proposal for an innovative problem solving method for the creation of product value	Faculty of Science and Engineering Graduate School of Creative Science and Engineering	This project proposes a method for valuable new product development plans and new business plans (through the theory of inventive problem solving [TRIZ]). This project proposes a new product development methodology that aims for radical innovation for the improvement of added-value in line with changes in society predicted for the next 5 to 10 years rather than aiming for continuous quality improvements for existing products (kaizen activities).	2014/05/21
research	2012-0629-01	Environment	Development of new coast defense structures resistant to tsunamis and high tide	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	In line with the rebuilding of coastline defense structures across the country as each location reaches its scheduled upgrade period, there is a need to shift the structural format used for coastal defense. This project proposes a new structural format that considers knowledge gained from the elucidation of damage mechanisms and the impact on the coastal environment.	2014/05/21
research	2012-1001-01	Environment	Realizing Thermal Comfort by Spot Air Conditioning and Personal Air Conditioning Systems	Professor Faculty of Science and Engineering School of Creative Science and Engineering	The purpose of our research is to evaluate the comfort level and intellectual productivity provided by personal air conditioning systems, which allow for individual adjustments of the air current. Specifically, we carried out an actual measurement study at offices that installed and are actually operating this air conditioning system, by setting different airflow conditions (adjustable and not adjustable). The results found that employees' satisfaction with the thermal environment was significantly higher and their comfort level increased when the airflow of personal air conditioning systems was adjustable. The study showed that spot air conditior current, have potential for improving the comfort level of employees.	2014/05/21
research	2012-1001-03	Environment	Creation of Energy Projections and Environmental Measures Scenario	Professor Faculty of Science and Engineering School of Creative Science and Engineering	A fact-finding survey was conducted of several office buildings that adopted summer energy-saving measures. The purpose of the survey was to explore sustainable energy-saving methods that would deliver high energy reduction effects without compromising productivity and comfort.[Research Outcomes]The survey found that the percentage of dissatisfied employees was smaller and that intellectual productivity could be better maintained when the lighting is decreased rather than when the temperature is raised, and that this measure significantly decreased electricity consumption.When implementing power-saving measures, it is believed that the electricity consumption amount can be decreased effectively without compromising the comfort level and productivity of employees by giving priority to saving electricity through lighting, installing desk lamps, and selecting appropriate power-saving approaches tailored to the attributes of employees who occupy the floor.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2012-1001-04	Environment	Scenario of Achieving Both Office Productivity and Economic Efficiency, and Energy Conservation	Professor Faculty of Science and Engineering School of Creative Science and Engineering	This study conducted an indoor environment study, employee behavior study, and questionnaire survey. Their objective was to observe the mutual relationship between intellectual activities and environmental factors that are demanded in workplaces of actual offices, and to gauge the effects of workplace environments of actual offices on employees. Furthermore, the study analyzed the mutual relationship between intellectual activities, employee behaviors, and workplace environments, and examined the environmental factors demanded of workspaces from the perspectives of intellectual productivity and energy conservation.[Research Outcomes](1) Important employee behaviors were different for each intellectual activity. Respondents declared that knowledge creation requires diverse employee actions, such as divergent thinking, informal communication, and relaxing. (2) At the buildings which were studied, employees carried out active communication not only at meeting spaces, but also in the vicinity of their desks. (3) Results hinted the possibility that employees' level of satisfaction with the environment was affected by the physical environment as well as employees' expectations of the environment based on how long they will stay there and what they are doing. (4) The results found that the following environmental factors affected employees' level of satisfaction with the environment at the buildings examined in this study. Thermal environment: "warm/cold sensation"; "hotness of the building upon arriving at the office"; and "shutdown of air conditioning during overtime hours". Lighting environment: "natural daylight"; "brightness of task lighting"; and "brightness from window". Air quality environment: "poor air circulation"; and "dustiness". Sound environment: "noise"; and "quietness". Air environment: "diversity of space"; "accessibility"; and "size of space".	2014/05/21
research	2012-1001-05	Environment	Assessment of Comfort and Intellectual Productivity in ZEB Energy-Saving Buildings	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Research is conducted on office buildings that are renovated to make them net-Zero Energy Buildings (ZEBs). Specifically, the effectiveness of the ZEB renovation work is examined by studying the changes pre- and post-renovation in the physical environment and employee satisfaction level.	2014/05/21
research	2012-1001-07	Environment	Research on the Thermal Environment of Comfortable Train Station Spaces	Professor Faculty of Science and Engineering School of Creative Science and Engineering	A measurement survey conducted in 2004-2006 took environmental measurements at four non-air-conditioned train stations in Tokyo and implemented a questionnaire survey to roughly 4,000 people. The results showed that the maximum acceptable temperature declared by more than 20% of the respondents in the summer was the standard effective temperature (SET*) of 32□C, and that the temperature exceeded this threshold limit in many time ranges. This threshold limit is higher than the maximum acceptable indoor temperature. The main factors attributed to hot train stations are weak air current and the considerable effects of the sun's rays, and proposals are being studied to address these factors. In the FY2011 study, a measurement survey was conducted at train stations at which a large commercial facility and an air conditioning system were installed inside the ticket gate. The results demonstrated that although the maximum acceptable temperature and comfort level in the summer were the same as non-air conditioned train stations, the lower limit of the comfort range was higher for train stations installed with air conditioning systems. The inflow of outdoor air could inhibit thermal environment control inside a train station. Therefore, detailed analyses are being carried out of the factors, and countermeasure proposals are being reviewed.	2014/05/21
research	2012-1001-08	Environment	Research on Semi-Volatile Organic Compounds (SVOCs) in Indoor Spaces	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Our laboratory is developing a new nozzle to collect house dust, and carries out analyses of the concentrations of SVOCs in house dust. Measurements are taken not only at general residential homes, but also in various spaces, such as homes made of natural materials and kindergartens, in order to measure indoor SVOC contamination levels. Furthermore, the speed of SVOC emissions from indoor finishing materials is measured to study how much impact the speed of SVOC emissions from building materials has on the concentration of SVOC in house dust. A variety of such studies are being implemented for developing measures to deal with indoor SVOC contamination.	2014/05/21
research	2012-1029-02	Environment	Research into inorganic separation membranes	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	■ Compared to traditional processes that make use of phase changes such as cryogenic separation, the separation process through a zeolite membrane enables energy savings. As shown in Fig. 1, zeolite has a separation function that makes use of differences in molecular size and adsorptive power. We were the first in the world to develop an inorganic membrane that achieved separation at a molecular level, and we have continued our research in this area. We developed a practical method of forming a thin zeolite membrane on a porous support. We also developed a unique characterization method of evaluating the structure of their inorganic porous membranes and separation performance, a part of which we are trying to turn into products.	2014/05/21
research	2012-1029-03	Environment	Development of cleaning agents for water and soil using inorganic materials	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	We have highly economical insolubilization technology for treating polluted soil, and water treatment technology for dealing with all toxic metals.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2024-0206-04	Nanotechnology / Materials	Analytical equipment specialized for Microdevices	Assistant Professor Faculty of Science and Engineering School of Fundamental Science and Engineering		2024/02/06
research	2024-0206-02	Nanotechnology / Materials	The New Interface Measuring Device using New Plasmon Sensor and Raman Scattering Spectroscopy	Professor Faculty of Science and Engineering School of Advanced Science and Engineering		2024/02/06
research	2022-0203-09	Nanotechnology / Materials	Ultra-low-loss Tapered Optical Fibers(TOFs) and Ultra-high-Q Microtoroidal Resonators	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Succeeded in developing a nanofiber optic with a transmittance of 99.7% or more using our unique technology● Developed a ”nano-fiber optic resonator” that combines a nano-fiber and a fiber Bragg grating (FBG). By combining this with a single atom that is laser-cooled and trapped, the world’s first all-fiber cavity QED system is realized.● Developing extreme generation, measurement, and manipulation technologies for quantum states of light using nano-fiber optic resonator● Aiming to realize scalable optical quantum computation by connecting cavity QED systems to each other with low loss via propagation mode and constructing a quantum network in which a large number of cavity QED systems are connected at a macroscopic distance.	2022/02/03
research	2022-0203-08	Nanotechnology / Materials	Quantum computers with Cavity QED with nanofiber optic resonator	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Proposing a distributed quantum computer using the original technology ”nano-fiber optic resonator QED “● The unique resonator treats photons and atoms of light as qubits. Each unit incorporated in this optical fiber becomes a quantum computer, and can be connected in the same way asa general optical fiber.	2022/02/03
research	2022-0203-07	Nanotechnology / Materials	Method for simultaneously observing atomic and electronic structures by a high-resolution display-type photoelectron analyzer with Spherical micro-hole grid	Guest Senior Researcher (retired)	● In 2013, Prof. Matsushita of NAIST invented the principle of a new type of electron analyzer (retarding field analyzer: RFA) and the special spherical micro-hole grid (3D Micromesh electrodes) using electron orbit simulation. By combining RFA (element electric field type analyzer) with a special grid, it has become possible to observe the 3D atomic structure of dopants by using PEH (photoelectron holography). In addition, it also enables to observe the electronic structure by ARPES (angle-resolved photoelectron spectroscopy).● Prof. Mizuno of Waseda University, who has accumulated know-how of micro processing technology for many years, and IMUZAK Co., Ltd. have realized spherical micro-hole grid (3D Micro mesh electrodes).● This RFA has been installed at SPring-8 Beamline BL25SU since April 2021.	2022/02/03
research	2022-0203-05	Nanotechnology / Materials	Hybrid Bonding at Low Temperature and Atmospheric Pressure	Guest Senior Researcher (retired)	● Hybrid bonding of Cu, PDMS, and quartz at 150 ℃ and atmospheric pressure	2022/02/03
research	2022-0203-04	Nanotechnology / Materials	Ag aerogel film; Binding interface easily & stably	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● A unique aerogel film made of Ag particles.● Contains no additive, easily sinters into bulk, and builds excellent electrical, thermal, and mechanical interfaces with high heat resistance.●Can be manufactured quickly at high yield with small Ag amount (~10 mg/cm2, material cost of ~1 JPY/cm2)	2022/02/03
research	2022-0203-03	Nanotechnology / Materials	Flame synthesis of single-wall carbon nanotubes	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	●Premixed flame for rapid heating of gas and decompositionof catalyst precursors.●Rapid mixing with carbon source for nucleation of catalystparticles and CNTs at high density.→ Continuous synthesis of 1 nm-diameter single-wall CNTs.	2022/02/03
research	2022-0203-02	Nanotechnology / Materials	Reforming of hydrocarbon to carbon nanotubes and hydrogen	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Produce CNTs at high yield from hydrocarbon by original fluidized-bed technology. Convert C and H in CnH2m to CNTs and H2.	2022/02/03
research	2022-0203-01	Nanotechnology / Materials	Application of Microdroplets to Chemical Reactions	Assistant Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Design of micro-devices to stabilize droplet generation,surface treatment of channels, and flow conditions● Encapsulation of chemicals for chemical reaction field control	2022/02/03
research	2020-1124-03	Nanotechnology / Materials	Operation of 3-D MEMS micro mirror by single superposed driving signal	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● By single driving apparatus, MEMS micro mirror is actuated in three resonant modes● MEMS micro mirror is operated in 3-D by single superposed signal with the three resonant frequencies	2020/12/17
research	2020-1124-01	Nanotechnology / Materials	New Synthesis Method for Boron Nitride Nanotubes (BNNTs)	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● New synthesis method of BNNTs by boric acid vapor	2020/12/17

type of seeds	number	field	title	researcher	summary	posted
research	2020-1124-02	Nanotechnology / Materials	Development of Test Method for Evaluating Pure Mode Interlaminar Fracture Toughness of Dissimilar Materials	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Application of Double Cantilever Beam (DCB) test● Cancel the effects of mixing modes when joining dissimilar materials and thermal residual stress● Accurate mode I interlaminar fracture toughness evaluation	2020/12/17
research	2020-0131-10	Nanotechnology / Materials	Seeing mental stress from invisible substances	Guest Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Detects many medically important stress substance signals of different origin ● Quick deduction of stress substances from multiple sensor signals on one chip● Stress management feedback considering circadian cycle and individual characteristics	2020/02/06
research	2020-0131-09	Nanotechnology / Materials	Battery Diagnosis by Square-Current Electrochemical Impedance Spectroscopy	Researcher (retired)	● Power controller in Battery Management System (BMS) can be formed only simple current veform, such as a square waveform. Applying square current input generated by power controller can measure impedance.	2020/02/06
research	2020-0131-08	Nanotechnology / Materials	Very Facile Production of Hydrogen Peroxide from Water under Sunlight	Senior Research Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	● We found that polythiophenes act as a rare, combined light-harvester and highly selective catalyst for the oxygen reduction to H2O2. Its combination with a conventional oxygen evolution catalyst in water (pH 12) achieved extremely high H2O2 production rate (>140 mg (H2O2) g-1 h-1).	2020/02/06
research	2020-0131-06	Nanotechnology / Materials	Walking and running robot crystals	Guest Senior Researcher (retired)	● Crystal actuators that move by light and heat● Light and tough mechanical crystals● Practical application to soft robots	2020/02/06
research	2020-0131-04	Nanotechnology / Materials	Record high carbon nanotube forests	Junior Researcher (retired) Affiliated organization Waseda Institute for Advanced Study	● Long CNT forest by novel growth method Catalyst × Reactor	2020/02/06
research	2020-0131-03	Nanotechnology / Materials	Development of new electric wireless seawater communication	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering	● Electric communication utilizing conductivity of seawater● Transmitter : metal electrode ⇔ Receiver : transistor shape sensor operating in solutions● Apply square wave voltage to metal electrode ☒ Pulse wave is transmitted to the receiver	2020/02/06
research	2020-0131-01	Nanotechnology / Materials	Skin-adhesive battery-less device communicating by hand touch	Professor Faculty of Science and Engineering School of Creative Science and Engineering	● Flexible electric devices mounted on polymer nanosheets ● Battery-less communication by electric NFC ● Wearable devices without discomfort due to glue contact	2020/02/06
research	2020-0131-07	Nanotechnology / Materials	Dissimilar Materials Bonding with 3D Nano Interface	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Fabrication of nano structure on aluminum surfaces● Improvement of bonding strength by silane-coupling treatment● Direct bonding of CFRTP and Al by hotpress● Evaluation of shear strength and fracture toughness	2020/02/06
research	2020-0131-05	Nanotechnology / Materials	A Novel Method for Gas-phase Removal of Catalyst Metals from Carbon Nanotubes	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Propose and develop simple dry purification method of CNTs● Applicable to a conventional apparatus● CNT No damaged● Over 90% of catalyst metal was removed● Very Effective for CNT manufactured by arc method,CVD method, floating method	2020/02/06
research	2020-0131-02	Nanotechnology / Materials	CNT-PSS Transparent Conductive Film: Simple, Flexible, Highly Conductive, Stable	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Simple fabrication via dispersing CNT in aqueous solution of PSS (Poly(p-styrene-sulfonic acid)) and coating● Conductive (115 Ω/sq) and transparent (90%) Stable in air for >1000 h or at >250 ☒C without passivation	2020/02/06
research	2019-0312-07	Nanotechnology / Materials	Fabrication of carbon nanotube yarn with high strength, conductivity and lightness	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Untwisted CNT yarns were fabricated from CNT array (Fig. 1)● Impurities and defect structures were removed by graphitization treatment● CNT yarns were combined with polymer or metal to enhance load transfer capability or conductivity between CNTs	2019/04/22
research	2019-0312-06	Nanotechnology / Materials	Display Device for Visual Texture	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● We proposed spatial mixing using glossy and matte surfaces for reconstruction of visual texture.● Our method can display various visual texture by changing the area ratio of glossy and matte surfaces.	2019/04/22

type of seeds	number	field	title	researcher	summary	posted
research	2019-0312-05	Nanotechnology / Materials	High Energy Density LIB Full Cells with Original CNT Sponge-Based S Cathode and Si Anode	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Original CNT Sponge-Based Battery - holds highly capacitive active materials (S cathode and Si anode) within light-weight, conductive, flexible CNT matrix, allows reversible volume change (S expands and Si shrinks during discharge) while conserves the total cell volume● Novel design with practical production process will realize “Soft Batteries” with innovative capacity at low cost	2019/04/22
research	2019-0312-04	Nanotechnology / Materials	Heat-Resistant Separator Made of Boron Nitride Nanotubes and Integrated Cathode/Separator/Anode for Light-Weight Batteries	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Boron nitride nanotube (BNNT) separator (>>500 ☒C). Binder-less, high porosity, high ion diffusivity.● NEW integrated structure of cathode/separator/anode. Thin-layer stack offering ion diffusivity & mechanical stability.● Light-weight LIBs based on CNT current collector instead of metal foils. →Enhanced safety, powder density, and energy density.	2019/04/22
research	2019-0312-03	Nanotechnology / Materials	Anisotropic Conductive Film of Ag-Cellulose Nanofiber Aerogel	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Structure is only nanofibers (e.g. cellulose), conductive particles, and Air● High conductivity due to the presence of particles NOT covered with resin● Air insulation between adjacent electrodes	2019/04/22
research	2019-0312-02	Nanotechnology / Materials	Flexible antenna coil for biological tissues	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● An inkjet-printed line was annealed at 250℃ for realizing low resistive (2.9×10-5 Ω・cm) on a glass substrates.● A low resistive printed line was transferred onto the low heat durable materials (Tg: 56℃) thanks to the cleavage of the multi-stacked graphene flakes.	2019/04/22
research	2019-0312-01	Nanotechnology / Materials	High Temperature Resistant Die Bonding Formed by Al/Ni Nano-particles Composite Paste	Professor (retired) Faculty of Science and Engineering Graduate School of Information, Production, and Systems	● Verification of void reduction effect by Al microparticle mixing ● Verification of stress relaxation effect of junction structure formed by Ni nano-/Al micro-particles composite paste● Evaluation of high heat resistance using SiC-SBD	2019/03/12
research	2018-1026-05	Nanotechnology / Materials Manufacturing Technology	Fabrication of nano-optical patterns by electron beam irradiation	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Nano-scale optical pattern was fabricated by electron beam irradiation ● Polymer was used for inducing unique optical properties● Luminescence properties were controlled by tuning the condition	2018/11/15
research	2017-0223-05	Nanotechnology / Materials	Ultra-Thin Film Luminescence Sensor	Guest Researcher (retired)	● Luminescence sensor made from free-standing polymer nanosheets with the thickness of tens to hundreds of nanometers.● Versatile fabrication by selecting sensor dyes (e.g.,temperature, oxygen concentration).● Ratiometric sensing of biological information.	2017/02/23
research	2017-0223-04	Nanotechnology / Materials	Operation of 3-D MEMS Micro Mirror by Single Superposed Driving Signal	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● By single driving apparatus, MEMS micro mirror is actuated in three resonant modes● MEMS micro mirror is operated in 3-D by single superposed signal with the three resonant frequencies	2017/02/23
research	2016-1024-05	Nanotechnology / Materials	Development of Biosensing Technology for Food Safety	Junior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Semiconductor-based biosensors can detect a small amount of target molecules in foods.● We have developed a biosensing technology to determine the presence of anaphylactogenic food allergens.	2016/10/24
research	2016-1024-04	Nanotechnology / Materials	Monitoring Chemical Balance in Epidermal Barriers	Guest Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● Detection of multiple chemicals in epidermal barriers from a smartphone ● Challenging to monitor stress hormones and small ions for healthcare. ● Accurate measurement method of skin pH within 10 sec	2016/10/24
research	2016-0204-01	Nanotechnology / Materials	Fabrication of carbon nanotube yarn with high functionality	太成 金 理工学術院	● CNT yarn was drawn from vertically aligned CNT array● CNT composite yarn was developed by electrolytic plating● Controlling of plating by changing plating condition● Superior electrical conductivity (2.14×107 S/m)	2016/02/04
research	2016-0203-09	Nanotechnology / Materials	Microfluidic white organic light-emitting diode	直史 小林 理工学術院 基幹理工学研究科 電子物理システム学専攻	● Greenish-blue and yellow LOSs were applied as liquid emitters● Integrated 60-☒m microchannels were fabricated● Greenish-blue and yellow liquid emitters were alternately injected into the fine microchannels (Fig. 3)● White light was generated with simultaneous greenish-blue and yellow emissions (Fig. 4 (a), (b))	2016/02/03
research	2016-0203-08	Nanotechnology / Materials	Boron-doped nanocrystalline diamond as a p-type transparent electrode	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering	● Production method of the p-type conduction of high Boron-doped NCD with high transmittance and excellent electrical characteristic● Achieving two layers which High Boron-doped NCD was grown on top of undoped transparent NCD with quartz substrate	2016/02/03

type of seeds	number	field	title	researcher	summary	posted
research	2016-0203-07	Nanotechnology / Materials	Vertically oriented graphite layers on diamond substrate	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering	● Implant ions to diamond (100) surface at high temperature ● Interstitial carbon atoms defuse to the diamond surface during the thermal treatment (1700oC, 2h) after implantation● High density vertically oriented graphite layer was formed on diamond surface	2016/02/03
research	2016-0203-06	Nanotechnology / Materials	MOSFET on polycrystalline diamond	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering	● We developed high breakdown voltage MOSFET with polycrystalline black diamond ● The device exhibits perfect modulation and good device characteristic pinch off and saturation region● High voltage breakdown of 1824 V by black polycrystalline diamond	2016/02/03
research	2016-0203-05	Nanotechnology / Materials	The new interface measuring device using new plasmon sensor and raman scattering spectroscopy	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Molecular configuration at buried interface, i.e. solid / liquid, Chemical structure change of the atomic level, are simply measured in nanometer scale.	2016/02/03
research	2016-0203-04	Nanotechnology / Materials	Scanning Near-field Optical Microscope(SNOM)	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● Spectroscopic evaluations with a nanometer spatial resolution are possible ● Extended from single channel measurements to multiplex measurements● Wide spectral range with highly accurate measurements are achievable● Applicable to opaque samples as well as transparent ones	2016/02/03
research	2016-0203-03	Nanotechnology / Materials	Generation of high power and broadband THz wave	Researcher (retired) Affiliated organization Waseda Institute for Advanced Study	● Intense broad band THz wave generation by electron beam● Efficient THz generation by electron pulse tilting● Suitable for THz spectroscopy● Intense THz wave as much as THz camera detection	2016/02/03
research	2016-0203-02	Nanotechnology / Materials	Electronic devices composed of polymer nanosheets	Guest Researcher (retired)	● Flexible electronic devices mounted on free-standing polymer nanosheets ● Fabrication of conductive lines by inkjet printing of silver nanoparticles at room temperature● Soldering-free packaging of electronic elements (e.g., LED) based on van der Waals interactions	2016/02/03
research	2016-0203-01	Nanotechnology / Materials	Light-driven Bending Crystals	秀子 小島 ナノライフ創新研究機構	● Crystals for light-driven actuator ● Photomechanical crystals replaced to shape-memory alloy● Crystal machinery replaced to MEMS	2016/02/03
research	2015-0424-01	Nanotechnology / Materials	Light-emitting Electrochemical Cells(LEC)	Researcher (retired) Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	・Hybrid device of electrochemistry and electronics ・Specially designed ionic liquids for LEC application・Simple solution process for low cost manufacturing	2015/04/24
research	2015-0303-09	Nanotechnology / Materials Energy	Power Generation Micro Device using Fe-Co Metal Alloy	Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	・New Fe-Co based magnetostrictive material (Developer; Hirosaki Univ, Tohoku Univ, Tohoku Steel Co., Ltd.) ・Vibrational power generating device with high electrical efficiency	2015/03/03
research	2015-0303-07	Nanotechnology / Materials	Ultra-low-loss Tapered Optical Fibers(TOFs) and Ultra-high-Q Microtoroidal Resonators	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	・The highest transmission measured for TOFs with an optimal shape is in excess of 99.7% with a total TOF length of only 23mm・Microtoroidal resonators to build on-chip cavity QED systems with very high quality factors	2015/03/03
research	2015-0303-06	Nanotechnology / Materials	Self-healing Metal Wire for Stretchable Devices	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	・High conductivity, and high stretchability for electric wire ・Selective healing of a crack on a wire by “self-healing” function	2015/03/03
research	2015-0303-05	Nanotechnology / Materials	Micro/Nano Device	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Electronic and Photonic Systems	・Specialized micro/nano fabrication technologies・Devices for chemical/bio-chemical analysis・synthesis and single-cell (a virus, a DNA, an organelle) analysis	2015/03/03
research	2015-0303-04	Nanotechnology / Materials	Electroforming Technique using Self-assembled Monolayer(SAM) for Modified Nanopatterns	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	・Electroless NiP nanoimprinting mold replicated from Self-assembled Monolayer (SAM) modified Nanopatterns ・Elaborately manufactured in nano size and complicated form	2015/03/03

type of seeds	number	field	title	researcher	summary	posted
research	2015-0303-03	Nanotechnology / Materials	New Wide Bandgap Semiconductor --- β-Ga2O3 Single Crystal	Advisor to the Dean of Academic Affairs (retired)	・The proposal and actual proof of β-Ga2O3 single crystal as a new wide bandgap semiconductor ・Advantageous growth nature of β-Ga2O3 single crystals from melt under atmospheric pressure.・Wide controllability of conductivity (Large band gap energy (4.8～4.9V)	2015/03/03
research	2011-0906-01	Nanotechnology / Materials	Observing substances under a near-field optical microscope	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	Using a near-field optical microscope allows observation of the shape, as well as the color of substances in an estimated area of 10 to 100 microns squared.	2014/05/21
research	2011-0906-02	Nanotechnology / Materials Energy	The controlling of light energy with precious metal nanoparticles (plasmonic substances)	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	Using a near-field optical microscope allows the observation and visualization of the plasmon of plasmonic substances. Plasmonic substances demonstrate a variety of behavior through their interaction with light, the progress of which can be tracked in high time and spatial resolution.	2014/05/21
research	2011-0906-03	Nanotechnology / Materials Energy	Organic-air rechargeable batteries	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	We developed an organic rechargeable battery that uses air for the cathode. It can be recharged in a short time (a few seconds). It’s capacity also remained almost unchanged through 500 charge-discharge cycles.An organic polymer material was used to replace the anthraquinone in the anode, to realize high energy concentration (221 mAh/g) through the multi-electron redox reaction.	2014/05/21
research	2011-0916-01	Nanotechnology / Materials	Large-scale molecular simulation	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Electronic and Photonic Systems	By using “dynamic bond-type large-scale molecular dynamic methods” we are able to perform large-scale molecular simulations that even include chemical reactions.	2014/05/21
research	2011-0922-03	Nanotechnology / Materials	Development of electrode materials and electrolytes for secondary batteries	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	Manufacture of secondary batteries using Li2S, formed using S as a byproduct of the petroleum refining process as the positive electrodes material.	2014/05/21
research	2012-0307-01	Nanotechnology / Materials	Organic “soft” secondary batteries	Senior Research Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	Development of macromolecules (redox polymers) that have the ability to rapidly and reversibly accept and donate electrons, and can be handled stably even in air at room temperature.	2014/05/21
research	2012-0712-04	Nanotechnology / Materials	All Wet ULSI manufacturing process	Senior Research Professor (retired)	This project proposes the creation of a barrier layer structure on top of a silicon substrate, low-k substrate, and polyimide substrate and then cooper wiring after that. The project aims to confirm that it is possible to shrink barrier film made with electroless plating to a thickness of 6 nm. Success has been made in embedding copper in a fine trench and constructing a protective layer using electroless and electro-plating.	2014/05/21
research	2012-0712-05	Nanotechnology / Materials	Hard-gold film technology for the realization of low-resistance and high mechanical strength	Senior Research Professor (retired)	This technology introduces carbon to hard AuNi film, making the structure of the film amorphous, and producing AuNiC film with greatly heightened abrasion resistance without lowering its electric resistance. A technology concerning the manufacturing of AuNiC film.	2014/05/21
research	2012-0712-06	Nanotechnology / Materials	Manufacturing of nano particle array substrates	Senior Research Professor (retired)	This project proposes the creation of nano particle array technology in order to realize bit pattern media (BPM) in which chemosynthesis is used to assign one recorded bit per single electro-particle with particle sizes of a few nanometers. The diagram is a scanning electron microscope (SEM) image showing a substrate with a physical guide attached to it, to which chemically modified organic particles have been joined, with FePt nanoparticles lined up on top of that. The registered array grouping of particles is foamed on the surface of meniscus which arises when the dispersed solution in the particles is dried, so it is possible that regularly arranged particles are moving in different directions. As such, it is possible to create a large domain of arrayed particles fixed on the substrate, ranging from a size of 10 to several 100 nanometers. However, disorder can be induced within such a range. Extremely small differences in particle diameters make the movement power between particles unequal, which catalyzes disorder in each array. The physical guide serves the role of preventing such disorder and making the domain more robust.	2014/05/21
research	2012-0928-01	Nanotechnology / Materials	Uncovering Electric Properties for the Development of Practical Applications of Polymer Nanocomposites	Senior Research Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Our laboratory is conducting the following research aimed at developing practical applications of polymer nanocomposites.・Controlling insulating and dielectric properties of epoxy resin nanocomposites by inorganic fillers ・Development and fabrication of highly insulating and highly thermally conductive materials suitable for miniaturized power semiconductor module ・Creation of magnetic and dielectric materials tailored to high frequencies	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2012-0928-03	Nanotechnology / Materials	Development of New Waveguide-mode Sensors	Senior Research Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Our laboratory is developing new waveguide-mode sensors, believing that various substances can be detected and substance constants can be measured using waveguide-mode sensors that have sensitivity, portability, and maneuverability. It is expected that sensors that have never existed will be developed by combining electrochemical-type methods and optical methods of waveguide mode sensors.1. Realization of an all-in-one automatic solution management device that can automatically manage additives, in addition to the basic composition of plating solutions.2. Realization of a sensor that can easily detect solutions with heavy metal content at levels of the environmental limit.	2014/05/21
research	2012-0928-04	Nanotechnology / Materials	Creation of Highly Functional Light Transmission Materials by Ion Irradiation	Senior Research Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Our laboratory creates highly functional light transmission materials by ion irradiation. We succeeded in increasing the functionality of polymer optical waveguides, based on our observation that the refractive index increases by irradiating ions into fluorinated polyimide, a polymer material.	2014/05/21
research	2012-1019-01	Nanotechnology / Materials	Fabrication of Nanoparticle Phosphor Film and Solar Cell Applications	Professor Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	Our laboratory made nanoparticle phosphors of several nm using the ball mill method. Transparent thin film with over 90% transmittance in all wavelength regions was fabricated using nano particle phosphors.Red phosphor transparent thin film that meets the following conditions is fabricated on the solar cell.(1) Short-wavelength light is converted to long-wavelength light (2) Long-wavelength light is transmitted as is (→using nanoparticles)　The following two types of materials are used as red phosphors.・Sulfide phosphor Ba2ZnS3: Mn (BZS)・Nitride phosphor CaAlSiN3: Eu (CASN)Research has long been conducted on sulfide phosphors. Our laboratory can turn sulfide phosphors into nano sizes of several nm by the ball mill method, and used them to fabricate transparent thin film with dispersing quality and high transmittance. Nitride phosphors have superior luminous efficacy and durability compared with oxides and sulfide phosphors. Accordingly, our laboratory is studying the conditions for turning nitride phosphors into nano sizes, and was able to obtain particles of several tens of nm that conduct wavelength conversion.We found that a transparent thin film was fabricated on the photodiode and that wavelength conversion was achieved in a short-wavelength light region.	2014/05/21
research	2017-0223-02	Energy	Development of Scalable Micro Thermoelectric Devices	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Electronic and Photonic Systems	● Si nanowire is used as the thermoelectric material. ● Miniaturized TE device fabricated by the Si-LSI process capable of mass-production	2017/02/23
research	2017-0223-01	Energy	Research on High-efficiency Thin-film Solar Cell using Quantum Effect	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	● There exists a bandgap energy suitable for a single-junction solar cell.　● A superlattice structure (Fig. 2) produces a stable exciton (Fig. 3) using its quantum effect.● A stable exciton absorbs solar light efficiently.	2017/02/23
research	2011-0920-04	Energy	Energy-saving and environmental techniques that use vapor compression heat pumps	Professor Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	We have been conducting research and development into revolutionary energy-saving vapor compression and condensation (VCC) technologies that compress vapor produced in the evaporation process, and continually recover condensation latent heat to reuse in evaporation; the theoretical design is complete and prototype experiments have been performed. Furthermore, we are researching how to improve efficiency of small-scale vapor compressors that are the key to making this technology commercially viable.	2014/05/21
research	2011-0922-01	Energy	Development of energy control techniques for the realization of a smart grid	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Electrical Engineering and Bioscience	Advanced methodologies will be developed through computer simulations and next-generation smart grid simulations, in order to enable total design of a suitable next-generation electrical energy supply configuration by which both of the above can be achieved continuously.	2014/05/21
research	2012-0220-01	Energy	Technology that uses numerical calculation to elucidate the internal transport mechanism inside lithium ion batteries	Professor Faculty of Science and Engineering School of Creative Science and Engineering	Using a lithium ion battery for HEV (hybrid electric vehicle), designed using a general-purpose numerical calculation software program BDS (Battery Design Studio), simulations of “constant current experiments on actual equipment” can be implemented. From the charge/discharge curve, a basic property obtained by simulation, the battery’s performance is efficiently and simply expressed, and they can be introduced into HEV simulators.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2012-0312-02	Energy	Design and operation of smart communities / Eco-towns that are resistant to natural disasters	Professor (retired) Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	Essential to the construction of local energy supply systems f or using renewable energy, which is readily affected by the we ather, is the technology ensuring a stable supply of power. In our laboratory, we are able to design, construct and evaluate local energy supply systems that provide stable power. By ens uring independent power, it is also possible to build a power structure that is resistant to disaster. The tools below can a lso support this effort as technological seeds; each of them c an be applied to full-scale target systems. 1. Large-scale com binatorial problem optimization algorithms, 2. Flow analysis a lgorithms for large-scale distribution networks, including loo ps and PV nodes, 3. Algorithms for deciding the optimal instal lation location of solar panels in order to obtain the maximum power for the given site. 4. Multipurpose optimization algori thms for deciding on generated power in full-scale power syste ms. 5. Extended fast algorithms for large-scale dynamic planni ng methods for power source development in developing countrie s. 6. Charge and discharge control simulation support tools th at take into account the running patterns of electric vehicles . 7. Optimal combination and capacity-deciding algorithms for smart grid power sources and batteries. 8. Construction and op eration analysis algorithms for smart communities, for accommo dating heat and electricity. 9. Pitch angle and battery contro l simulation support tools for easing the fluctuation in wind power output. 10. Energy system optimization algorithms for th e construction of local-production-for local-consumption-based eco-cities led by the region.	2014/05/21
research	2012-0313-02	Energy	Heat extraction rate max imized by the use of nan ofluid in heat exchanger s	Professor (retired) Faculty of Science and Engineering Graduate School of Advanced Science and Engineering	Mixing TiO2 nanoparticles into the media (water) inside a heat exchanger and conducting several hours of preliminary steam g enerator operation, causes the nanofluid to adsorb onto the in side of the heat transfer tube and a nanostructure to be forme d. So doing increases the heat extraction rate.	2014/05/21
research	2012-0313-03	Energy	Design, production, and performance evaluation o f environment-conscious electric vehicles	Professor Faculty of Science and Engineering Graduate School of Environment and Energy Engineering	This research laboratory has been developing electric buses an d different types of electric vehicles up to this point. Resea rch has progressed to the level of commercial use for electric buses in particular. Based on such findings, it is possible t o conduct evaluations on the design, production, and performan ce of a variety of electric vehicles.	2014/05/21
research	2012-0712-01	Energy	Long-life negative silic on anode synthesis for n ext-generation lithium-i on batteries	Senior Research Professor (retired)	This technology has successfully produced composite products m erging silicon and organo-mineral complex substances at the mi cro-level through the simultaneous reductive decomposition of organic solvents and reduction of silicon. The resulting silic on electrodes are composed of amorphous silicon made of oxygen and carbon that has been diffused at the nano-scale. Even aft er 7,000 cycles, this technology shows extremely superior outp ut figures of approximately 800 mAh/g.	2014/05/21
research	2012-0712-02	Energy	Evaluating lithium-ion b attery (LIB) cell degrad ation using an impedance measurement	Senior Research Professor (retired)	This technology aims to establish a “usable” battery evaluatio n method for currently marketed LIBs using impedance analysis. While thinking about the structural aspects of the battery le ading to such issues as electrolyte resistance, interface reac tions between the batteries north and south poles, surface fil ms, and ion diffusion within film and solid states, the projec t considers the minimum possible factors for degradation, inst alls an analogous circuit usable for the analysis of a wide ra nge of frequency bands, and analyzes LIB capacity degradation based on the resulting impedance reactions. In addition, by ca rrying out impedance analysis under low temperature conditions , it is thought possible to conduct a correct analysis by usin g processes not admissible within a normal temperature range.	2014/05/21
research	2012-0712-03	Energy	Production technology de velopment for the creati on of a next-generation laminated lithium-ion ba ttery	Senior Research Professor (retired)	This technology makes it possible to supply 50 to 1,000 mAh ne xt-generation laminated lithium-ion batteries. The laminated c ells are constructed under laboratory conditions within a dry-air environment (supplied air - dew point at	2014/05/21
research	2012-0807-01	Energy Environment	Innovative Energy-Saving Technology Based on Hea t Pumps	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	This technology is characterized by two principles. First, hea t moves from hot things to cold things. Secondly, if gas is sp ewed out all at once from a high-pressure area to a low-pressu re area, then the gas is cooled rapidly. This technology is ex pected to have significant energy conservation potential depen ding on the operating conditions. Furthermore, with the develo pment of smart systems, it will become important that optimal energy systems are operated with heat pumps forming the crux o f the systems.	2014/05/21
research	2012-0903-01	Energy	Experiment Using High Qu ality Beams	Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	The Washio Laboratory conducts research on PEMFC. It is also w orking on the development of materials which can be used as an electrolyte membrane for a Polymer Electrolyte Fuel Cell (PEF C) that is capable of having a compact and light weight design .	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2012-0903-02	Energy	Uncovering the Initial Process of Radiation Chemical Reactions: Pulse Radiolysis Experiment	Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	The Washio Laboratory is developing the world's smallest pulse radiolysis system using a compact photocathode RF electron gun. At present, the laboratory has nearly completed the development of a nanosecond resolution system and picosecond resolution system. The nanosecond system is capable of directly measuring time behavior using an oscilloscope. Thus, many samples may be measured in a short timeframe, and combined with the picosecond system, the phenomenon can be followed in a broad time region.	2014/05/21
research	2012-0903-03	Energy	Maskless Direct Etching Technique Using Focused Ion Beams (FIB)	Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	This research attempts to carry out maskless direct etching using focused ion beams (FIB) in order to study the nanoscale microfabrication of cross-linked PTFE. An image of the fabricated microscopic structure FE-SEM is shown in a diagram.	2014/05/21
research	2012-0903-04	Energy	Development of Inverse Compton Scattering Soft X-ray Sources Using Photocathode RF Gun	Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	■Development of Inverse Compton Scattering Soft X-ray Sources Using Photocathode RF GunIn this research, compact and high quality soft X-ray sources are being developed using inverse Compton scattering, with the final goal of applying them to soft X-ray microscopes for biological observations. Inverse Compton scattering involves the creation of shorter wavelength light through the collision of high energy electrons and long wavelength light, and is the inverse process of the generally well-known Compton scattering. The Washio Laboratory is working on the development of high quality electron beam sources using a photocathode RF gun, as well as researching their applications. This research is one of the experiments for these applications. So far, the laboratory has succeeded in the preparation and detection of soft X-rays using inverse Compton scattering.	2014/05/21
research	2012-1029-01	Energy	Synthesis of Ordered Porous Materials and Catalytic Chemical Applications	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	■Research on micro- and mesoporous materialsA precursor gel is once dried, and this is then crystallized in the vapor phase. The use of the DGC method allows the preparation of zeolites with structures and compositions not obtainable by the hydrothermal synthesis method. The Laboratory conducts research on the crystallization mechanism of zeolite by the DGC method. Using the DGC or hydrothermal synthesis method, the Laboratory searches for microporous crystals with new structures, assesses catalyst characteristics, ascertains the crystallization process, and develops a method for inserting heteroelements into the crystal skeleton.	2014/05/21
research	2017-0223-07	Manufacturing Technology	Healing of Fatigue Crack in the Metallic Materials by Heat Treatment	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Implementation of fatigue crack healing of 90%● Implementation of static tensile strength of 75%● Fatigue crack healing due to elimination of oxide film by vacuum heating, plasticity-induced crack closure and atomic diffusion.	2017/02/23
research	2017-0223-06	Manufacturing Technology	Direct Bonding of Dissimilar Materials Having 3D Nanostructured Interfaces	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	● Fabrication of nanospike structure (NSS) on aluminum surfaces● Direct joining of CFRTP and Al by hotpress● Improvement of adhesive strength by silane-coupling treatment	2017/02/23
research	2017-0223-03	Manufacturing Technology Energy	Development of a Simple Fabrication Process for a Printable Piezoelectric Energy Harvest Device	Senior Researcher (retired) Research Council (Research Organization) Institute for Nanoscience & Nanotechnology	● A metal nanoink and a household printer is used for electrode Fabrication and lamination method is used for Assembly of the device ● Electric power of ☒ 1.12 μJ was obtained	2017/02/23
research	2011-0914-04	Manufacturing Technology	Manufacturing methods and improvement of mechanical properties for porous metals	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering Department of Applied Mechanics and Aerospace Engineering	Manufacture of various kinds of aluminum alloy using the melt-foaming method (proposal for pore stabilization)Technique for strengthening porous metals by plastic working (rolling, extrusion, wire brushing, shot peening, etc.)	2014/05/21
research	2011-0922-04	Manufacturing Technology	Liquid crystal wide-angle fovea lenses	Guest Researcher (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	We are currently working to develop liquid crystal wide-angle fovea lenses, by adapting elements using liquid crystal materials, whose refraction index can be controlled by an externally applied voltage, to enable changes in magnification and the position of the focus (single or multiple), while maintaining a 120 degree wide field of view. They are constructed from 1.5mm optical lenses (liquid crystal lens cells), and do not require mechanically moving parts.	2014/05/21
research	2012-0618-01	Manufacturing Technology	Life-cycle simulation technology for the realization of recycling-oriented production	Professor (retired) Faculty of Science and Engineering School of Creative Science and Engineering	This project creates life-cycle planning and life-cycle simulation technology in order to plan and evaluate entire product lifecycles, from design, production, specification, collection, and recycling, all in order to build in measures to reduce environmental burdens from the product planning and development stages.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2015-1215-07	Social	Human-Robot Musical Interaction	Professor Faculty of Science and Engineering	● Musical robots must be able to communicate with partner artists(Fig.2)● Musical robots should recognize and send real-time non-verbal signals● Sensor system for real-time non-verbal signals monitoring● Multi-sensor: detects several signals at once (Fig.3)	2015/12/15
research	2015-1215-06	Social	Human-Robot Laughter Interaction	Professor Faculty of Science and Engineering	● Sensor system for real-time laughter monitoring(Fig.2)● Wearable: non-invasive and portable ● Multi-sensor: measure all laughter-related body changes	2015/12/15
research	2015-1215-05	Social	Development of a Wearable Motion Capture System for Balance Evaluation of Older Adults	Professor Faculty of Science and Engineering	● Inertial Measurements Unit (IMU) motion capture system (Fig.1)● One Leg Stance test with older adults (Fig.2) ● Automatic One Leg Stance segmentation (Fig.3)● Auto-detection of gait abnormality (Fig.4)	2015/12/15
research	2015-1215-04	Social	Development of Subliminal Persuasion System for Laparoscopic Training	Professor Faculty of Science and Engineering	● Experimental setup and materials(fig.1)● Different types of feedback(fig.2)● The different between first trial and last trial(fig.3)● Workload of each group during laparoscopic training(fig.4)	2015/12/15
research	2015-1215-03	Social	A Robot Arm with Novel, Intrinsically Safe Joints	Guest Senior Researcher Faculty of Science and Engineering Graduate School of Creative Science and Engineering	● Novel actuators with adjustable torque limiters● Direct Teaching capability● 7 DOF robot arm, 1m reach, 5kg payload	2015/12/15
research	2015-1215-02	Social	Small Sized Force / Torque Sensors for Robotic Arms and Hands	Guest Senior Researcher Faculty of Science and Engineering Graduate School of Creative Science and Engineering	● Novel 6-axis F/T sensor based on capacitive ensing● Novel 3-axis force sensors for distributed tactile sensing	2015/12/15
research	2015-1215-01	Social	Ultrasonic Diagnosis Support Robot for Prenatal Care	Professor Faculty of Science and Engineering School of Creative Science and Engineering	● Online service : The obstetrician controls “Tenang” via teleoperation to see the ultrasonic images and diagnosis in real time.● Offline service : “Tenang” moves automatically to get and send the fetus images. The obstetrician checks them by the image reconstruction system.	2015/12/15
research	2011-0906-04	Social	The creation of indexes for fostering green manufacturers and green consumers	Professor Faculty of Social Sciences School of Social Sciences	We implement a method of analyzing inter-industry relations in the evaluation of influence by corporate environmental activities on the environment from a wide range of perspectives. Furthermore, econometrics methods based on social statistics will be applied in order to evaluate and analyze the correlation between consumer behavior and the activities of corporations themselves, such as family budget surveys and industrial statistics surveys. Consideration will then be given to consumer satisfaction (usefulness index), production costs incurred by the company, environmental impact (the LCA-based CO2 emissions resulting from the manufacturing of that product), etc., at the same time, to determine what corporations should do and what kind of information they should publicize in order to reduce the CO2 emissions of society as a whole when faced with the difficult problem of choosing between whether to:1. Sell PET bottle beverages refrigerated or at normal temperature2. Promote the use of public transport or carsharing3. Build a new eco-house or renovate an existing one	2014/05/21
research	2011-0907-01	Social	Methods of quantitative evaluation and searching for industry-academia and inter-corporate alliances in research and development	Associate Professor (retired) Affiliated organization Waseda Institute for Advanced Study	We can analyze the influence inter-corporate collaboration has on the boosting of research and development capabilities using object data such as those taken from patents or academic papers.Using the results of analyses to select the coordinator that is most suitable for the issue at hand leads to the potential to establish a network among companies of different industries with the minimal amount of time, effort and money by making use of the coordinator’s network.	2014/05/21
research	2011-0907-02	Social	Scientific analysis of the workflow in the production of animation and long-term human resources cultivation	Associate Professor (retired) Affiliated organization Waseda Institute for Advanced Study	Based on detailed ethnographic analyses of the workflow in the production process of animations at different companies, it is possible to recreate simulations of the individual processes. Based on this model, we will be able to give advice on division of labor from the perspectives of efficiency and long-term cultivation of human resources who engage in creating the contents of animations.	2014/05/21
research	2011-0921-01	Social	Change in population and society in Northeast China	Faculty of Social Sciences School of Social Sciences	In order to strengthen the competitiveness of the Chaoxianzu who live in Northeast China, as a people in the country, unique efforts are being made in terms of education in particular. At Yanbian University for example, there is much enthusiasm not only for Korean and Chinese but also for Japanese education. The rates of exchange studies and employment for its students in Japanese universities and companies is also high. For this reason, the region is characterized by the high educational level of the people first and foremost, and also for its pro-Japanese attitude. Information can be provided on the status of Northeast China (which is expected to develop in the near future), from the primary perspectives of ethnic education and changes in adaptation to society.	2014/05/21

type of seeds	number	field	title	researcher	summary	posted
research	2011-0929-01	Social	Earthquake reconstruction and protection of living heritage from the perspective of Islamic architectural history in India	Part-time Lecturer (retired) Research Council (Research Organization) Organization for Islamic Area Studies	We learned about the mapmaking in Bhadreshwar, Mundra, Kutch District in the state of Gujarat, India (plane table survey), its community classification under religion and the caste system, and the architectural assets remaining from an era when the region flourished through Indian Ocean trade. In the reconstruction support that followed the earthquake, the public were educated in order to understand the protection of living heritage and other buildings, and collaborative activities with Indian urban development enterprises have been implemented. There is also a personal network in the Indian Islamic world.	2014/05/21
research	2012-0928-02	Frontier	Uncovering Polymer Dielectric Properties in Terahertz Frequencies	Senior Research Professor (retired) Faculty of Science and Engineering School of Advanced Science and Engineering	Our laboratory studies the electric and optical properties of dielectric materials. The types of dielectric materials we study are as follows:・Polymer research, electronic device research, applied optics research ・Nuclear power and accelerator application research	2014/05/21
research	2025-1107-03	Life sciences	スマートフォンを用いた他覚的眼屈折力測定システム	Associate Professor Faculty of Human Sciences School of Human Sciences		2025/11/07
research	2023-1025-07	Life sciences	世界の動物輸血医療を変える人工赤血球	Guest Senior Researcher (retired)	◆ ウシHbを脂質膜で被覆したリポソーム型人工酸素運搬体◆ 特許技術による製造方法の確立（特許6061343号、早稲田大学）◆ と畜牛の廃棄血液の有効活用による安定的確保	2023/10/25
research	2023-1025-05	Life sciences	細胞老化の制御による創薬：NASH, HCC治療薬を例として	Professor Faculty of Human Sciences School of Human Sciences	◆スクリーニングの結果、非アルコール性脂肪性肝疾患／非アルコール性脂肪及び肝がんの予防・治療剤候補を同定した。	2023/10/25
research	2023-1025-04	Life sciences	新奇な環状ペプチド “ジケトピペラジン(DKP)”のスマートバイオプロセスによる機能性の開発研究	Professor Faculty of Human Sciences School of Human Sciences	◆ 細胞内の品質管理を担うオートファジーを活性化することで、健康増進に寄与する可能性がある。◆ 開発研究によって、ある種のDKPに細胞内のオートファジーを活性化する作用を見出している。◆ オートファジーの活性化は、美容や妊活などにも機能することから、DKPの新奇の健康機能性を開拓できる。	2023/10/25
research	2023-1025-03	Life sciences	株式会社BioPhenoMA 早稲田大学から新規ベンチャーがスタート！	Professor Faculty of Education and Integrated Arts and Sciences School of Education	◆ 質量分析法などに比べて、圧倒的に簡便で迅速。前処理はほぼ不要。低価格も実現。◆ PCRによる核酸検出（NAAT）法と比べて、死菌・生菌などの区別が容易。◆ 創薬開発の効率化・個別化医療のほか、作用機序の解明により、新たな創薬・治療ターゲットの創出や、生物医学分野の更なる進歩に貢献。	2023/10/25
research	2023-1025-02	Life sciences	タンパク質の極微量定量法の検査への応用	Professor Faculty of Education and Integrated Arts and Sciences School of Education	◆ タンパク質を検出するシグナルを増幅すれば極微量のタンパク質も定量できる。◆ サンドイッチELISA法とthioNADサイクリング法とを組み合わた 「酵素サイクリング改良法」を用いると極微量のタンパク質も定量できる。	2023/10/25
research	2023-1025-01	Life sciences	酵素を複合化した高分子ファイバー・センサ～気相での保存と使用ができ、生体ガスをイメージングする～	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	◆ 酵素を自家蛍光が低い水溶性高分子に混合して電荷紡糸のみで作製。◆ ガス透過性に適したファイバー・メッシュ状センサ。◆ 気相で保存しそのまま使用できる。 まずエタノールガスの検出を実施。	2023/10/25
research	2016-0614-02	Life sciences	顎顔面マッサージロボット	Professor Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	顎関節症等の疾患に有効な顎顔面マッサージを行うロボットの設計ならびに制御に関する技術．この技術を用いることで，熟練した施術者が行うような力強さとしなやかさを兼ね備えたマッサージが可能．	2016/07/14
research	2014-0122-08	Life sciences Nanotechnology / Materials	光学顕微鏡を用いた局所温度測定	Part-time Lecturer (retired) Research Council (Research Organization) Organization for University Research Initiatives	・ポリマーナノ粒子型の蛍光ナノ温度計・ナノ粒子の直径は約100nm、位置決め精度は数nm、温度分解能は約0.3℃・カメラの速度に依存した高い時間分解能（数10 ms～数10μs程度）	2014/01/31
research	2013-1022-06	Life sciences	クエン酸濃度の迅速測定法	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	・従来法（15分程）と異なり、数秒で測定可能・有機溶媒や高価な酵素を用いず、検出感度が高い	2013/10/25
research	2013-1022-05	Life sciences	機能性ペプチドの合成法	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Chemistry	・非リボソーム型ペプチド合成酵素(NRPS)由来のモジュールやドメインを利用したジペプチド合成・特定アミノ酸に限定されないジペプチド合成技術	2013/10/25

type of seeds	number	field	title	researcher	summary	posted
research	2013-1022-04	Life sciences	海洋天然化合物	Professor Faculty of Science and Engineering	・海洋無脊椎動物は低分子化合物の宝庫・エピジェネティクス研究のツール	2013/10/25
research	2013-1022-03	Life sciences	生体内常在性物質による抗がん作用	Professor (retired) Faculty of Education and Integrated Arts and Sciences	・がん細胞に対して選択的に死滅・増殖抑制させる化合物Ｘを発見した・化合物Ｘは生体内に常在する物質であるため副作用がない	2013/10/25
research	2013-1022-01	Life sciences	コラーゲンを用いる新規DDS	Professor Faculty of Science and Engineering	・ステルス性と高尿排泄性を持つ今までに無い薬物担体・抗原性が低く安定	2013/10/25
research	2013-1021-03	Life sciences	人工赤血球の新しい臨床応用	Guest Senior Researcher (retired) Research Council (Research Organization) Organization for University Research Initiatives	・人工赤血球(Hb小胞体)の製造法を確立・安全性・有効性の膨大なデータを保有・カプセル化により分子状Hbの毒性を回避	2013/10/25
research	2013-1021-02	Life sciences	諸物性がデザインできる “テーラーメイド輸送体によるDDS”	Guest Senior Researcher Faculty of Science and Engineering	・創薬とDrug Delivery Systems(DDS)を融合させるプラットフォーム・ナノ輸送体の物性デザインにより薬物動態を制御(独自の機能性脂質ライブラリーを使用）・新薬開発の加速、付加価値DDS製剤の創出	2013/10/25
research	2013-1021-01	Life sciences	高感度DOI-PET検出器	Professor Faculty of Science and Engineering School of Advanced Science and Engineering Department of Applied Physics	・画像診断用PET装置の解像度向上・ガンマ線の吸収位置「３次元」計測　・磁場耐性の新しい半導体光センサー	2013/10/25
research	2013-1017-03	Life sciences	非侵襲的内出血抽出アルゴリズム	Professor Faculty of Science and Engineering School of Creative Science and Engineering	・救急医療における内出血検出（ＦＡＳＴ）の感度向上・超音波画像処理に基づき血液貯留の疑義箇所を抽出する診断支援システムの構築	2013/10/25
research	2013-1017-02	Life sciences	モバイル端末操作型エコー遠隔診断ロボット	Professor Faculty of Science and Engineering School of Creative Science and Engineering	・遠隔地医師によるモバイル端末の操作で，救急搬送中の外傷患者の内出血の有無を診断可能・開発した操作アプリ・ロボット・通信技術を妊婦健診に活用することで新たなビジネスプランを創出	2013/10/25
research	2013-1017-01	Life sciences	非侵襲メラノーマ診断支援システム	Professor Faculty of Science and Engineering	・非侵襲的方法によるメラノーマの早期発見・色素分子レベルの情報に基づく客観的かつ定量的な診断支援	2013/10/25
research	2025-1107-01	Environment	トリプルハイブリッドによる圧縮空気駆動型モビリティの実現	Professor Faculty of Science and Engineering Graduate School of Environment and Energy Engineering		2025/11/07
research	2012-1001-06	Environment	自動車室内の快適な温熱環境に関する研究	Professor Faculty of Science and Engineering School of Creative Science and Engineering	本研究では、非定常・不均一な温度環境下における快適性予測を目的とし、車室内乗員の詳細な生理量予測、快適性予測を試みている。夏季炎天下条件、冬季暖房条件に実車両を用いた被験者実験を実施し、予測精度の検証データを得ている。 それらの結果を基に、体温調節数値モデルである人体熱モデルJOSの開発・改良に加えて、人体熱モデルJOSと数値流体解析CFD・放射解析との連成計算を行っている。	2012/10/01
research	2025-1107-02	Nanotechnology / Materials	温度変化で可逆的に形態変化するハイドロゲル	Guest Junior Researcher		2025/11/07
research	2023-1025-06	Nanotechnology / Materials	流体制御による高効率細胞トラップデバイスの開発	Assistant Professor Faculty of Science and Engineering School of Fundamental Science and Engineering	◆ 独自流路構造によって細胞の単離や任意の細胞の取り出しに成功	2023/10/25
research	2023-0127-07	Nanotechnology / Materials	３Dナノ界面を有する異種材料接合技術	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering		2023/01/27
research	2023-0127-06	Nanotechnology / Materials	切り紙構造を用いたフレキシブル熱電発電デバイス	Professor Faculty of Science and Engineering School of Fundamental Science and Engineering		2023/01/27

type of seeds	number	field	title	researcher	summary	posted
research	2023-0127-05	Nanotechnology / Materials	新しい化学反応手法の確立	Assistant Professor Faculty of Science and Engineering School of Fundamental Science and Engineering		2023/01/27
research	2023-0127-04	Nanotechnology / Materials	感圧/感温塗料を用いた可視化計測技術	Professor Faculty of Science and Engineering School of Creative Science and Engineering		2023/01/27
research	2023-0127-03	Nanotechnology / Materials	気相で保存できそのまま使える高分子とタンパク質の複合化分子認識・センシング材料の開発	Professor Faculty of Science and Engineering School of Advanced Science and Engineering		2023/01/27
research	2023-0127-02	Nanotechnology / Materials	大量センサへ配線レスで給電する素子の開発	Professor Faculty of Science and Engineering School of Advanced Science and Engineering		2023/01/27
research	2023-0127-01	Nanotechnology / Materials	海水のイオン導電性を利用した海中無線通信 ～海水管，漁業用いけす内のワイヤレスリアルタイムモニタリングが可能に～	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering		2023/01/27
research	2014-0122-07	Nanotechnology / Materials	異種材料の低温大気圧ハイブリッド接合技術	Guest Senior Researcher (retired)	・配線金属と透明基板材料の150℃・大気圧雰囲気での混載接合（他材料接合事例あり） IEEE NANO ベストポスターペーパー賞，日刊工業新聞掲載（2013.10.25），関連特許２件 など	2014/01/31
research	2014-0122-06	Nanotechnology / Materials	ナノインプリント技術を用いた高品質GaNテンプレート基板	Guest Senior Researcher (retired)	・ナノインプリント技術によるナノサイズのマスクパターン転写技術 ・ドライエッチング技術によるELOに適したマスクパターン形成技術 ・ＨＶＰＥ技術によるGaN結晶成長技術（古河機械金属（株））・光学測定による結晶性／残留歪評価技術（金沢工業大学）	2014/01/31
research	2014-0122-03	Nanotechnology / Materials	EB-NILによる極微細構造体作製	Professor (retired) Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	・省エネ・低コストでの微小部材作製方法・生体適合性に優れた微小部材・極限環境下で使用可能な耐薬品・耐熱・耐放射線性に優れたフッ素系微小部材	2014/01/31
research	2014-0122-02	Nanotechnology / Materials	新規なプラズモンセンサ及びラマン分光法を用いた界面計測技術	Professor Faculty of Science and Engineering School of Advanced Science and Engineering	・表面プラズモンセンサと表面増強ラマン散乱を応用したラマン分光法による界面計測技術・新規なナノ構造の「反射型プラズモンセンサ」を開発・測定物に対応した自由なセンサ部の設計が可能・固液界面を深さ分解能0.1nm以下、非破壊での観察を実現	2014/01/23
research	2014-0122-05	Nanotechnology / Materials	ダイヤモンド半導体を用いた高信頼性電力素子	Professor (retired) Faculty of Science and Engineering School of Fundamental Science and Engineering	・550℃の大気中でも導電性が確保され、絶縁性が向上した保護膜の製造方法・表面を水素化したダイヤモンド基板上に２層の保護膜を形成することで実現	2014/01/23
research	2016-0614-01	Manufacturing Technology	医療手技訓練用ヒューマノイド	Professor Faculty of Science and Engineering Waseda Research Institute for Science and Engineering	医師など医療従事者の訓練に用いる患者シミュレータに関する技術. アクチュエータによって1台のシミュレータでさまざまな患者を再現することや，センサによって手技を計測し評価することが可能.	2016/07/14
research	2018-0402-01	Frontier Manufacturing Technology	視知覚の数理科学とその産業応用、特に各種画像処理技術、錯視、商用アートへの展開.	Professor Faculty of Education and Integrated Arts and Sciences	新井研究室では、人の視覚系が行っている脳内の情報処理を最先端の数学を使って研究し、更に画像処理、錯視（目の錯覚）、商用アートへの応用を行っています。また人の視覚を超えた超視覚システムの研究もしています。これまでに次のような発明をして、複数の特許を取得した。本研究の展開と産業応用に関する提案を歓迎します。これまでの主な成果は次のものです。 錯視の数学的方法による生成技術とパッケージ利用 人の視覚に優しい画像鮮鋭化 視認し難い対象物を容易に視認できるようなエッジ検出 新しいFIRフィルタ設計技術 色の対比錯視のコンピュータによる再現と逆問題の解決	2018/04/26
research	2015-0303-08	Frontier Nanotechnology / Materials	極短電子線パルス発生装置	Researcher (retired) Affiliated organization Waseda Institute for Advanced Study	・高品質・極短電子線パルスを電子銃単体にて発生・高周波加速による小型かつ超高圧電子線の実現	2015/03/03

Contact	**WASEDA UNIVERSITY Research Innovation Center** E-mail : contact-tlo@list.waseda.jp URL : https://www.wrs.waseda.jp/seeds/en/