ACCESS

Tokyo International Forum

E Block, B2F (Exhibition Hall 2)

3-5-1 Marunouchi, Chiyoda-ku, Tokyo, Japan
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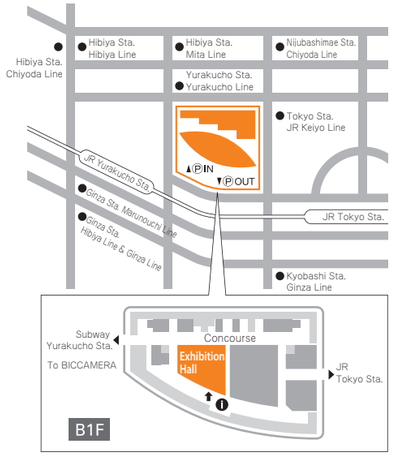

From Narita Airport

80-90 minutes to Tokyo Station
by Limousine Bus

53 minutes to Tokyo Station
by JR Narita Express

JR

5-minute walk from Tokyo Station
(connected by B1 concourse
with Keiyo Line at Tokyo Station)

1-minute walk from Yurakucho Station

From Haneda Airport

23 minutes to Hamamatsucho Station
by Monorail

4 minutes from JR Hamamatsucho Station
to Yurakucho Station

Subway

1-minute walk from Yurakucho Station
(connected by B1 concourse)

Keio Leading-edge Laboratory of Science and Technology (KLL)

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12th Annual Keio Science and Technology Exhibition

KEIO TECHNO MALL 2011

Let's get started

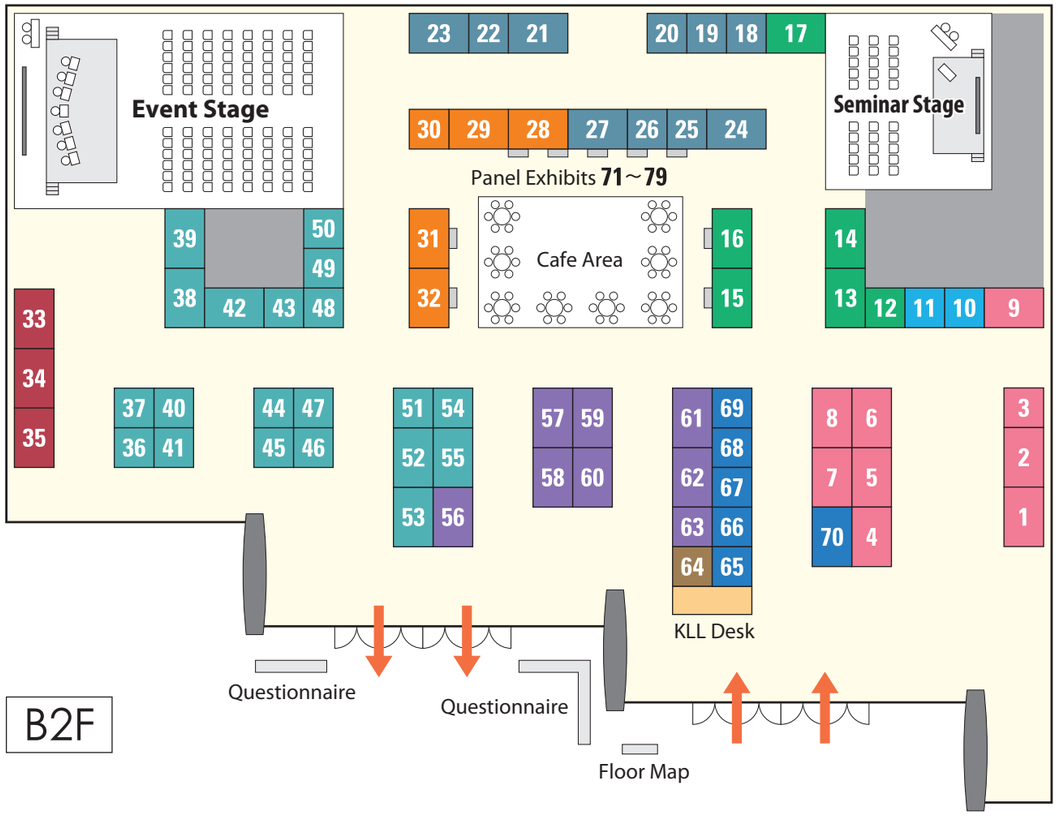
9 Dec fri 10:00 ▼ 18:00

Admission Free

Tokyo International Forum

E Block, B2F (Exhibition Hall 2)

Floor Map



KEIO TECHNO-MALL 2011

Program of Events
Outline of Exhibits

KEIO TECHNO-MALL provides four platforms

1 **Encounters with researchers and subjects of research**

You can be sure of unexpected encounters and first-hand information otherwise unattainable on the internet. More than just topics related directly to your own products or business, perhaps, you will find subjects of research with prospects for new business expansion.

2 **Expanded scope and greater flexibility**

By learning about the actual research at exhibition booths and seminars, talking directly with the researchers and feeling actual objects, you will be able to get a real feeling for the expanse of possibilities. Also, with regard to collaboration with universities, KLL will respond flexibly to requests for advice about procedures and contractual aspects.

3 **Internal publicizing of research results**

With the KEIO TECHNO-MALL being a venue for the objective, academic publication of research results, you can demonstrate the outcomes of industry-academia collaboration inhouse as part of your R&D activities, and you can utilize it as a place for paving the way for business expansion.

4 **Search for product / technology possibilities**

Proposals for the utilization of your products and technologies in helping research are also very welcome. The KEIO TECHNO-MALL provides a platform for linking to the development of new products and technologies amid the flow of people, objects, funds and information.

Program of Events

Premium Session

Keynote speech by JAXA's Dr. Junichiro Kawaguchi and premium session with young researchers from the Faculty of Science and Technology

Where Event Stage　When 15:30 – 17:00

Under the title of "Premium Session" and based on the theme of "Let's get started," organizers of this year's KEIO TECHNO-MALL have invited Dr. Junichiro Kawaguchi from the Japan Aerospace Exploration Agency (JAXA), which has supported the development of science and technology in Japan, to engage in discussion with researchers from the Faculty of Science and Technology on such topics as collaborative industry-government-academia activities as well as on research and education.
In this day and age when there is a need for capacity to respond to critical situations and changes in the environment, universities that are responsible for the next generation of research and education should demonstrate a new *raison d'être* in society, reflecting upon the research activities and the relationships between science and technology on the one hand and national policies and industry on the other.
The Premium Session will allow you to realistically experience lively discussion and the trends between young researchers involved in the latest research activities broadcasting the idea of "Let's get started" and the research leader who headed the *Hayabusa* (Peregrine Falcon) project.

Keynote Speech 15:30 – 16:15 (45 min.)

KAWAGUCHI, Junichiro

Senior Fellow
Principal Investigator, Professor
Department of Space Systems and Astronautics
Institute of Space and Astronautical Science (ISAS)
Japan Aerospace Exploration Agency (JAXA)

[Personal background]
Aerospace engineer, Doctor of Engineering. After graduating from the Faculty of Engineering at Kyoto University in 1978, received a doctoral degree in aeronautics from the School of Engineering at the University of Tokyo. Took a position of assistant at the Institute of Space and Astronautical Science (ISAS) (former Ministry of Education, Science and Culture), and assumed a professorship in 2000. Between April 2007 and September 2011, served as a Program Director in the Lunar and Planetary Exploration Program Group (JSPEC, JAXA), and between 1996 and September 2011, served as the *Hayabusa* Project Manager. Currently serves as Professor and Principal Investigator in the Department of Space Systems and Astronautics at the Institute of Space and Astronautical Science (ISAS, JAXA). Has served as a Senior Fellow since August 2011. Was involved in such missions as the Halley's Comet explorer *Sakigake*, the engineering testing satellite *Hiten* and the Mars orbiter *Nozomi*, and holds the position of Project Manager for the asteroid explorer *Hayabusa*.

Premium Discussion 16:15 – 17:00 (45 min.)

KAWAGUCHI, Junichiro

TAKEDA, Akiko
Associate Professor,
Dept. of Administration Engineering, Faculty of Science and Technology,
Keio University

USHIBA, Junichi
Assistant Professor,
Dept. of Biosciences and Informatics, Faculty of Science and Technology,
Keio University

Event Stage (96 seats)

Round-table Session I
"Science is awesome!"

Lively discussion on why science is fun by young science faculty members. They might be young, but they are all distinguished scientists. Don't miss it!

10:30-11:50 (80 min.)

Facilitator: ITOH, Kohei
Professor,
Dept. of Applied Physics and Physico-informatics

HAYASE, Junko
Associate Professor,
Dept. of Applied Physics and Physico-informatics

TANABE, Takasumi
Assistant Professor,
Dept. of Electronics and Electrical Engineering

OAKI, Yuya
Research Associate,
Dept. of Applied Chemistry

CHIBA, Ayano
Research Associate,
Dept. of Physics

SASADA, Makiko
Research Associate,
Dept. of Mathematics

Round-table Session II
"Drug Discovery Research in the Faculty of Science and Technology"

Discussion on drug discovery research in academia and in particular on the more innovative efforts for the creation of lead compounds for therapy, from chemistry, biology and information engineering perspectives.

12:30-13:50 (80 min.)

Facilitator: IMOTO, Masaya
Professor,
Dept. of Biosciences and Informatics

UMEZAWA, Kazuo
Professor,
Dept. of Applied Chemistry

SAKAKIBARA, Yasubumi
Professor,
Dept. of Biosciences and Informatics

DOI, Nobuhide
Associate Professor,
Dept. of Biosciences and Informatics

Premium Session

15:30-17:00 (90 min.)

Keynote speech by JAXA's Dr. Junichiro Kawaguchi and premium session with young researchers from the Faculty of Science and Technology

Seminar Stage (30 seats)

Technology Partnership Seminars (30 min. each)

10:15-10:45

A New Technology of the Recycle of the Waste Solvent Removed VOC by Vacuum Evaporation with Air Flow

TANAKA, Shigeru
Professor,
Dept. of Applied Chemistry

10:55-11:25

Potential of Visualization Provenance Management

FUJISHIRO, Issei
Professor,
Dept. of Information and Computer Science

11:35-12:05

Thin-Film Technology for Saving Energy

SHIRATORI, Seimei
Associate Professor,
Dept. of Applied Physics and Physico-informatics

12:15-12:45

EEG Analysis for Objective Evaluation Method without Questionnaire

MITSUKURA, Yasue
Associate Professor,
Dept. of System Design Engineering

12:55-13:25

Responsive Multithreaded Processor for Distributed Real-time Systems

YAMASAKI, Nobuyuki
Associate Professor,
Dept. of Information and Computer Science

13:35-14:05

Studies on the Problems on the US Method for Evaluating Properties of Sunscreen Formulations

ASAKURA, Kouichi
Professor,
Dept. of Applied Chemistry

14:15-14:45

Distributed and Cooperative Control of Distributed Energy Systems with Renewable Energy Generators

NAMERIKAWA, Toru
Associate Professor,
Dept. of System Design Engineering

14:55-15:25

Tele-Reality: Perception and Action Media beyond Space

KATSURA, Seiichiro
Associate Professor,
Dept. of System Design Engineering

Outline of Exhibits

Features of KEIO TECHNO-MALL

Easy to explore, discover, and understand

- Emphasis on actual demonstration and displays
- Opportunities to meet with university faculty members on site
- Ongoing Technology Partnership Seminars* and Round-table Sessions*

*Schedules shown in Program of Events on Page 4-5.

Special symbols used in the following exhibition descriptions

Keio Patent — Technology involving patent rights held by Keio University. For more information, please inquire at the KLL Desk.

Seminar — Technology Partnership Seminar; schedule shown on Page 5.

Medical Engineering and Medical Welfare

Medical Engineering and Medical Welfare | Mechanics and Systems

BOOTH 1

Smart-eco-design

Professor **YAMAZAKI, Nobutoshi**
Department of Mechanical Engineering

We demonstrate electric-power-free products that utilize natural human motion and shape: power-assist clothes for caregiving, pillows that adapt to posture changes, and bicycle saddle and pedals for ladies. Please experience our unique products at this booth.

Medical Engineering and Medical Welfare | Information and Communication

BOOTH 2

Application of Olfactory Display to Medical Care

Keio Patent

Professor **OKADA, Kenichi**
Department of Information and Computer Science

Currently, health checkup examination includes the checking of sight and hearing but not of the olfactory sense. Therefore, we are now developing an olfactory checkup method using the olfactory display we invented.

Medical Engineering and Medical Welfare | Other Fields

BOOTH 3

Studies on the Problems on the US Method for Evaluating Properties of Sunscreen Formulations

Keio Patent Seminar

Professor **ASAKURA, Kouichi**
Department of Applied Chemistry

In US, no warning statements are required on sunscreen products for their risk of skin cancer if they are proved to be BROAD SPECTRUM. We have found a serious problem that simple manipulation of coating procedure of sunscreen formulations made them meet the standard for BROAD SPECTRUM.

Medical Engineering and Medical Welfare | Electronic and Optical Devices

BOOTH 4

Intra-vascular Laser Medical Applications

Professor **ARAI, Tsunenori**
Department of Applied Physics and Physico-informatics

In this booth, we'll display the new techniques with laser light, which can less-invasively and selectively diagnose and treat for the arteriosclerosis lesion. In addition, we'll show the novel therapeutic device using laser light irradiation.

Medical Engineering and Medical Welfare | Electronic and Optical Devices

BOOTH 5

Innovative Arrhythmia Laser Treatment Launched from Keio University

Professor **ARAI, Tsunenori**
Department of Applied Physics and Physico-informatics

We study and propose the novel less-invasive treatment for arrhythmia including atrial fibrillation with Photodynamic Therapy (PDT). In this booth, we'll demonstrate the developing laser devices and run a videotape of our study for introduction.

Medical Engineering and Medical Welfare | Materials

BOOTH 6

Surface Engineering for Biomaterials

Keio Patent

Professor **KOMOTORI, Jun**
Department of Mechanical Engineering

In recent years, metals are used as implants for medical treatment and are placed inside human body for a long time. To satisfy safeness in long-term usage, there have been numerous approaches toward such materials. Here are some of the new surface modification processes developed recently.

Medical Engineering and Medical Welfare | Information and Communication

BOOTH 7

Monitoring System Using Radio Waves

Keio Patent

Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce our new monitoring and localization system based on radio waves. The system is applicable to monitor elderly person living alone. It can also monitor such as bathroom and restroom without invading privacy.

Medical Engineering and Medical Welfare | Mechanics and Systems

BOOTH 8

Nanoscale Manipulation

Keio Patent

Associate Professor **KATSURA, Seiichiro**
Department of System Design Engineering

Katsura Laboratory has developed a "nano manipulation system" that transmits manipulated force sensation of a nanoscale object to an operator. We aim to apply this technology in medical treatment and production process.

Drug Discovery, Regenerative Medicine and Biomedical Materials

Medical Engineering and Medical Welfare | Other Fields

BOOTH 9

Understanding the Brain, Utilizing the Brain –Development of Neuroscience-based Rehabilitation Devices–

Assistant Professor **USHIBA, Junichi**
Department of Biosciences and Informatics

In collaboration with medical faculty and hospitals, we research the mechanism of how the brain controls our body. The findings are resolved to the educational activity as computer graphic animation archives, and they are applied to develop "thought-controlled orthosis" as a tool for functional recovery from hemiplegia due to stroke.

Drug Discovery, Regenerative Medicine and Biomedical Materials | Environment and Biology

BOOTH 10

Development of Cell-patterned Chip Using Ozone/UV Exposure Process

Assistant Professor **MIYATA, Shogo**
Department of Mechanical Engineering

We developed a new surface-modification device for controlling cellular adhesion by using ozone/UV exposure process. In this booth, the ozone/UV exposure system and skin cell-patterned chip will be exhibited.

Drug Discovery, Regenerative Medicine and Biomedical Materials | Environment and Biology

BOOTH 11

Photodegradation of AIDS Related Proteins

Keio Patent

Professor **TOSHIMA, Kazunobu**
Department of Applied Chemistry

AIDS is a serious infection. The development of a prevention against AIDS is very important. We will introduce a novel type of medicines which effectively and selectively degrades an AIDS related protein (HIV-1 protease) with photo-irradiation under mild conditions and without any additives.

Environment and Biology

Environment and Biology | Materials

BOOTH 12 Enzymatic Synthesis of Biobased Elastomer

Professor **MATSUMURA, Shuichi**
Department of Applied Chemistry

A series of aliphatic polyesters has been synthesized by the enzyme-catalyzed polymerization of biobased monomers as environmentally benign elastomers. A transparent elastomer has been obtained by the crosslinking of polyepoxyricinoleate using diacid anhydride. Also, a thermoplastic elastomer has been obtained from copolyesters containing alkyl side chain.

Environment and Biology | Other Fields

BOOTH 13 Inkjet Printed Chemical Sensors for Healthcare and Environmental Analysis

Keio Patent

Associate Professor **CITTERIO, Daniel**
Department of Applied Chemistry

Standard inkjet printing technology has become an important tool for industrial mass production. We demonstrate that by using this technology, low-cost-paper- and plastic-substrate-based chemical sensing devices for healthcare and environmental analysis can be fabricated on a single inkjet printer.

Environment and Biology

BOOTH 14 A New Technology for Recycling the Waste Solvent after Removal of VOC by Vacuum Evaporation with Air Flow

Keio Patent Seminar

Professor **TANAKA, Shigeru**
Department of Applied Chemistry

Recycling of waste solvent after removal of VOCs from the solvent is necessary for reducing its treatment cost and environmental load. A new technology was developed for recycling the waste solvent by vacuum evaporation with air flow to evaporate VOCs efficiently and separate them from the waste solvent in real time.

Environment and Biology | Information and Communication

BOOTH 15 Smart Taste-sensor Applications

Keio Patent

Professor **SUZUKI, Koji**
Department of Applied Chemistry

The taste sensor system we have developed can quantify taste. This system mimics human gustation and enables food and beverage analysis and food evaluation. We will demonstrate the analysis and present examples of sales increases actually obtained through the use of this system in collaboration with local businesses.

Environment and Biology | Materials

BOOTH 16 Chemical Sensors and Probes for Healthcare, Environmental Analysis and Bioimaging

Keio Patent

Professor **SUZUKI, Koji**
Department of Applied Chemistry

Our laboratory's research goal is the development of highly sensitive and selective chemical sensors and bioimaging probes. Here, we present (1) novel bright fluorescent and chemiluminescent dyes for various target analytes, (2) functional MRI contrast agents for specific target detection, and (3) fluorescent probes for selective bioimaging.

Environment and Biology | Materials

BOOTH 17 Fabrication and Characteraization of Highly Durable Nanofibrous Membrane with Water Resistance for Clean Air Filter Application

Associate Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

We employed a nanofiber fabrication method to develop various applications for protecting ecology and saving energy. For example, we succeeded in fabricating a filter membrane with a high filtration efficiency and low pressure loss, and in improving their mechanical durability and water resistance.

Mechanics and Systems

Mechanics and Systems | Medical Engineering and Medical Welfare

BOOTH 18 BOOTH 19 Medical Haptics

Keio Patent

Professor **OHNISHI, Kouhei**
Department of System Design Engineering

Teleoperations have been developed for extreme environments in which humans cannot enter. Bilateral control is one of the control methods that enable the transmission of tactile sensation of a remote object to an operator, using robots. Therefore, bilateral control has various applications such as medical surgery that require precise operations.

Mechanics and Systems | Medical Engineering and Medical Welfare

BOOTH 20 Advanced Control System for Human Support Motion

Professor **MURAKAMI, Toshiyuki**
Department of System Design Engineering

New system design strategies that take advanced human operational capabilities and safety into full consideration are required for designing control systems for devices and equipment that support human body motion, and that have attracted considerable and increasing interest. We propose a new design concept for the human support devices and equipment.

Mechanics and Systems | Other Fields

BOOTH 21 Development of Next-generation Machine Tools Capable of Sensing Force

Associate Professor **KAKINUMA, Yasuhiro**
Department of System Design Engineering

To add intelligence to machine tools, a sensor-less machining-force-monitoring method is developed. Novel machining technologies based on this method are also proposed. Specifically, these technologies are micromachining, contact detection, position-force hybrid machining, and automation of polishing. We will present the technology with actual demonstrations and video.

Mechanics and Systems | Materials

BOOTH 22 New Development of Electro-adhesive Sheet

Professor **AOYAMA, Tojiro**/Associate Professor **KAKINUMA, Yasuhiro**
Department of System Design Engineering

We have developed the functional material for an "electro-adhesive sheet" whose surface adhesive property can be changed according to applied electric field. The EA sheet can be applied to a brake, clutch, fixture mechanism, and so on.We will exhibit the developed devices in our booth.

Mechanics and Systems | Medical Engineering and Medical Welfare

BOOTH 23 Microsystems for Human Lives

Associate Professor **MIKI, Norihisa**
Department of Mechanical Engineering

Our laboratory is developing many types of microdevices whose applications range from information communication technology, such as tactile displays and wearable line-of-sight detection system, to laboratory-on-a-chip that can handle cells and bacteria.

Mechanics and Systems | Information and Communication

BOOTH 24 Development of Four-wheel Omni-directional Vehicle

Associate Professor **NAKAZAWA, Kazuo**
Department of System Design Engineering

Quick motion performances are realized by combining four wheel modules with an autonomous move function, and carrying out cooperation operation of each. Improvement in the motion performance, such as a turn in a narrow place, is expectable by adopting it as not only a senior car but a wheelchair.

Mechanics and Systems | Environment and Biology

BOOTH 25 New Trend of Mixing Technonolgy

Professor **UEDA, Toshihisa**
Department of Mechanical Engineering

Mixing technology is widely used including food engineering and medical engineering. Recently, the mixing technology has been reconstructed based on the chaotic dynamics. We present new mixer for high viscous fluids.

Mechanics and Systems | Environment and Biology

BOOTH 26 New Trend in the Reactive Fluid Dynamics

Professor **UEDA, Toshihisa**
Department of Mechanical Engineering

Non-steady combustion, combustion of methane hydrate and extinction by a carbon dioxide hydrate are introduced as an application of combustion technology. A reformer to form high purity hydrogen is introduced as an application of reforming technology.

Mechanics and Systems | Information and Communication

BOOTH 27 Skill Acquisition System

Keio Patent

Associate Professor **KATSURA, Seiichiro**
Department of System Design Engineering

Katsura Laboratory has developed a "motion-copying system" that preserves human motions as digital data and reproduces them anytime and anywhere. We focus on industrial applications of this technology for skill acquisition of experts and for skill-based training.

Electronic and Optical Devices

Electronic and Optical Devices | Information and Communication

BOOTH 28 BOOTH 29 Photonics Polymer for Face-to-Face Communication

Professor **KOIKE, Yasuhiro**
Department of Applied Physics and Physico-informatics

We exhibit a Face-to-Face communication system realized by photonics polymer based on the principles of optics, photonics and polymer. Our Face-to-Face communication system, exceeding a conventional system based on the Internet, is demonstrated by the fastest plastic optical fiber and high-resolution, large-size display.

Electronic and Optical Devices | Information and Communication

BOOTH 30 Silicon Quantum Computing

Professor **ITOH, Kohei**
Department of Applied Physics and Physico-informatics

Computing based on bit information, 0 or 1, stored in single atoms in silicon semiconductors is presented.

Electronic and Optical Devices | Environment and Biology

BOOTH 31 The Application of Optical Films by Wet Processing

Keio Patent

Associate Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

The application of anti-reflection films onto optical devices, such as glasses or solar cells, has attracted much attention to improve the device properties. In our laboratory, such films were fabricated by low-cost and eco-friendly layer-by-layer self-assembly method without vacuum processing.

Electronic and Optical Devices | Information and Communication

BOOTH 32 Optical Interconnection Devices for Exa-scale Computing

Associate Professor **ISHIGURE, Takaaki**
Department of Applied Physics and Physico-informatics

We introduce graded-index parallel polymer optical waveguide for board-level optical interconnections enabling Exa-scale high-performance computing. We also exhibit carbon nanotube and graphene doped polymer optical devices for passive-mode laser applications.

Materials

Materials | Environment and Biology

BOOTH 33 Application of Microbubbles in Food Engineering

Professor **TERASAKA, Koichi**
Department of Applied Chemistry

We introduce some novel microbubble technologies such as functional foods involving microbubbles, separation of valuable component, and purification of waste water in the food industry.

Materials | Mechanics and Systems

BOOTH 34 Surface Engineering for Structural Steel

Keio Patent

Professor **KOMOTORI, Jun**
Department of Mechanical Engineering

There are many surface modification treatments done to metals used for machines and constructions aiming to functionalize its properties. Properties needing to be improved are fatigue strength, corrosion resistance, wear resistance, and more. Here are some of the new surface modification processes developed recently, targeting to improve such properties.

Materials | Environment and Biology

BOOTH 35 Antifouling Coating Film with Superhydrophobic and Superoleophobic Property

Keio Patent

Associate Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

Antifouling coating film of superhydrophobic and superoleophobic property was fabricated. The film can not be soiled by liquid that have various surface energy and viscosity including cooking oil, soy source, mayonnaise and ketchup. And the durability of the coating film was enhanced.

Information and Communication

Information and Communication

BOOTH 36 Character Creation Support System Using Sensitivity Rule Extraction

Professor **HAGIWARA, Masafumi**
Department of Information and Computer Science

A character creation system using sensitivity rule extraction is demonstrated. A character-creation system based on extracted sensitivity rules is demonstrated. A user evaluates the character that the system creates. By repeating the evaluation, the system automatically learns and analyzes the user's sensitivity and taste. Finally, the system makes the user's favorite character using the extracted sensitivity rules.

Information and Communication | Other Fields

BOOTH 37 Automatic Dialog Generation System

Professor **HAGIWARA, Masafumi**
Department of Information and Computer Science

Conversation with humor or laugh can give us affluence and is indispensable for our daily life. Here we introduce automatic dialog generation systems. One is an automatic *Manzai* comic dialog generation system in which ordinary sentences are converted to funny sentences using *boke* (funny man) and *tsukkomi* (straight man).

Information and Communication | Medical Engineering and Medical Welfare

BOOTH 38 Motion Analysis System for Human-Robot Interaction

Associate Professor **IMAI, Michita**
Department of Information and Computer Science

Our system captures 3D motion data of human's behaviors when he/she is interacting with a robot.

Information and Communication | Mechanics and Systems

BOOTH 39 Wearable Robot and Active Display

Associate Professor **IMAI, Michita**
Department of Information and Computer Science

A robot mounted on one's shoulder makes him/her share experiences with a remote user. Also, an active display shows information changing the posture of itself.

Information and Communication | Medical Engineering and Medical Welfare

BOOTH 40 VIDELICET: A Visualization Provenance Management System

Seminar

Professor **FUJISHIRO, Issei**
Department of Information and Computer Science

A prototype of a visualization provenance management system called VIDELICET is introduced, which allows us to record, trace and reuse visual analyses of numerical datasets arising in measurement and simulation.

Information and Communication | Environment and Biology

BOOTH 41 Distributed and Cooperative Control of Distributed Energy Systems with Renewable Energy Generators

Seminar

Associate Professor **NAMERIKAWA, Toru**
Department of System Design Engineering

A distributed energy system with renewable-energy generators, e.g., PV and wind turbine, is one of the most popular research topics worldwide. We propose safe, reliable cooperative, and distributed control, and estimation and prediction methodologies for electrical power network systems with renewable-energy generators.

Information and Communication | Other Fields

BOOTH 42 The Simultaneous Interactions from Multiple Viewpoints for Designing Three-dimensional Space

Professor **OKADA, Kenichi**
Department of Information and Computer Science

In designing three-dimensional space, the overhead view and the viewpoint of a person in that space are used. Our system assists in designing three-dimensional space by actualizing simultaneous interactions from these viewpoints by using two types of touch panels.

Information and Communication | Other Fields

BOOTH 43 Network Access Authentication System Using EAP-TTLS

Professor **TERAOKA, Fumio**
Department of Information and Computer Science

One of the most secure methods for network access control is EAP-TLS in which users and servers use digital certificates. However, it is troublesome to manage users' digital certificates. In EAP-TTLS, users can use password and servers use digital certificate for mutual authentication for network access control.

Information and Communication | Mechanics and Systems

BOOTH 44 Two-wheel Robot Car with Gyro

Professor **TANAKA, Toshiyuki**
Department of Applied Physics and Physico-informatics

Recently, studies on the development of autonomous robot cars have been carried out, but most studies target the development of four-wheel vehicles. We construct an autonomous robot bike that remains stable while resting and moves stably at low speeds. This robot bike is targeted for entertainment purposes, e.g., the leading vehicle in a marathon.

Information and Communication | Medical Engineering and Medical Welfare

BOOTH 45 Computer Aided Diagnosis Based on Image Analysis

Professor **TANAKA, Toshiyuki**
Department of Applied Physics and Physico-informatics

Recently, a computer diagnosis by image analysis attracts the attention in medical field. We target on construction of system for a pathological diagnosis, a clinical diagnosis, nondestructive inspection and so on. Current candidates are a prostate cancer, a lung tumor, an uterus cancer, brain damage by stroke.

Information and Communication | Environment and Biology

BOOTH 46 EVNO ～Energy Virtual Network Operator～

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

We propose a new architecture for power grids. It separates the existing power grid into power generation systems and power transmission systems. EVNO (Energy Virtual Network Operator) efficiently controls distributed energy sources and creates a virtual power generation system. In this booth, we show the effects of the management of EVNO.

Information and Communication

BOOTH 47 Ubiquitous Grid Networking Environment ～uGrid～

Keio Patent

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

We propose the Ubiquitous Grid Networking Environment (uGrid) as a next-generation service in cloud computing. In uGrid, IP addresses are allocated in devices, software functions, contents, and so on, all over the world. Further, services are provided by the mash-up passes that combine these on the network.

Information and Communication

BOOTH 48 Responsive Multithreaded Processor for Distributed Real-time Systems

Keio Patent Seminar

Associate Professor **YAMASAKI, Nobuyuki**
Department of Information and Computer Science

RMT Processor integrates a processor core (RMT PU), which executes eight threads simultaneously based on their priority. It supports four real-time communication links (Responsive Links), various I/O devices (e.g., Space Wire, PCI-X, IEEE1394, and PWM), an IPC controller, and a run-time execution tracing.

Information and Communication | Mechanics and Systems

BOOTH 49 BOOTH 50 Facial Action Mimicking Avatar System

Keio Patent

Associate Professor **MITSUKURA, Yasue**
Department of System Design Engineering

This avatar system is based on head pose estimation and facial expression recognition using a web camera. Thanks to the fast and accurate technology, avatars can express natural demeanor. Our system also can be applied to many applications such as video-conference systems.

Information and Communication | Electronic and Optical Devices

BOOTH 51 Robust Wireless LAN Based on Cognitive Radio Technology

Professor **SANADA, Yukitoshi**
Department of Electronics and Electrical Engineering

Wireless LANs have become popular due to the popularity of smart phones. However, a small number of channels is shared by many wireless LAN equipments. Sanada laboratory focuses on cognitive radio technology that estimates the surrounding radio environment. On the basis of the cognition of the environment, reliable wireless LANs can be realized.

Information and Communication

BOOTH 52 Next-generation Photonic Multicast Delivery Technology with Ultrahigh-speed Optical Switches

Keio Patent

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

We have proposed an active optical access network (ActiON) employing high-speed optical switches that ensure a higher subscriber number and longer transmission distance than those in the case of the conventional PON. We will describe a next-generation photonic multicast delivery technology with ultrahigh-speed optical switches.

Information and Communication

BOOTH 53 Self-organized Energy-saving Network ～MiDORi～

Keio Patent

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

The MiDORi technology presented by the Yamanaka Laboratory is a network-control approach for network-wide energy saving. It applies traffic engineering (TE) to aggregate traffic and power-off network links, thus reducing energy consumption.

Information and Communication | Mechanics and Systems

BOOTH 54 Video Streaming and Network Security in P2P Networks

Associate Professor **SHIGENO, Hiroshi**
Department of Information and Computer Science

We present recent studies on video-streaming services that consider the priority of data and network security using reputation mechanism by each user in P2P networks. The goal of our studies is to build an efficient and secure network.

Information and Communication | Mechanics and Systems

BOOTH 55 Tele-Reality System

Keio Patent Seminar

Associate Professor **KATSURA, Seiichiro**
Department of System Design Engineering

Tele-Reality is a new keyword that refers to the enhancement of "perception and action" in remote environments without physical transfer. Katsura Laboratory is developing a platform for sensation transmission of visual, audio, and haptic information in real time.

Administration Engineering

Administration Engineering | Information and Communication

BOOTH 56 Building Human Behavior Recognition and Working Support Environment Using Various Sensors

Assistant Professor **IIJIMA, Tadashi**
Department of Administration Engineering

The aim of this research is building support environment for human actions by estimating some kind of situations, such as position, pose, intention of user from observation by various sensors.

Administration Engineering | Information and Communication

BOOTH 57 Building Fine-grained Access Control Policy Definition and Cloud Server Environment for Electronic Distributive Documents

Assistant Professor **IIJIMA, Tadashi**
Department of Administration Engineering

An electronic distributive document such as a medical record is shared by many people (e.g., doctor, nurse, druggist, clinical technologist, and clerk). The aim of this research is building a document-management environment with role-based fine-grained access control policy on cloud servers.

Administration Engineering | Architecture and Urban Simulation

BOOTH 58 Building Agent-based Simulation Environment with Geographical/Spatial Information for Evacuation Planning

Assistant Professor **IIJIMA, Tadashi**
Department of Administration Engineering

The goal of this research is to build a geo-simulation environment for evacuation planning by using an agent-based simulation technique. The agent-based simulation technique is based on modeling of human decision-making and behaviour. To improve the reality of the simulation, we attempt to attach spatial and geographical data to the simulation model.

Administration Engineering | Information and Communication

BOOTH 59 Japanese Wikipedia Ontologies

Professor **YAMAGUCHI, Takahira**
Department of Administration Engineering

Ontologies mean information structure for word network and hierarchy. However, considerable cost is involved in their development. This work shows a tool for semi-automatically retrieving Japanese Wikipedia ontology and applications with Japanese Wikipedia ontologies.

Administration Engineering | Information and Communication

BOOTH 60 Ontologies-based Humanoid Robot NAO with Dialog and Action

Professor **YAMAGUCHI, Takahira**
Department of Administration Engineering

We develop a humanoid robot NAO on the basis of ontologies, which mean information structure for word network and hierarchy. NAO can carry on a verbal dialog with humans, answer simple questions, instruct humans in physical exercise, and learn new actions.

Administration Engineering | Other Fields

BOOTH 61 Simulating Optimal Trading and Hedging Strategy in the Financial Markets

Associate Professor **IMAI, Junichi**
Department of Administration Engineering

The recent and still existent financial crisis has resulted in sudden rises and precipitous falls in the financial market. In order to capture these phenomena, a stochastic process called the Levy process has been proposed. We analyze the impact of the phenomena and provide appropriate trading strategies by performing simulation.

Administration Engineering | Other Fields

BOOTH 62 Cause and Effect Structure Analysis and Quantification for Customer Satisfaction and Service Quality

Professor **SUZUKI, Hideo**
Department of Administration Engineering

Service is intangible, yet it is crucial to conduct causal analysis, quantification of service, and their application to problem discovery and solution. We will present case studies of professional sports services, music, etc., in which we quantify service quality and customer satisfaction, and conduct relational analysis with business performance indicators.

Administration Engineering | Other Fields

BOOTH 63 A Study on the Methodology for Quality Management: the Use of Process Control, Experimental Design, Response Surface Method and Principal Points

Professor **SUZUKI, Hideo**
Department of Administration Engineering

Statistical methods are effective tools for quality management, but the need has emerged for higher-level methods that are compatible with the current environment. We will present our research on quality management methods, such as process control using multivariate analysis, response surface methodology based on split-plot, principal points, etc.

Architecture and Urban Simulation

Architecture and Urban Simulation | Environment and Biology

BOOTH 64

Making Nature and Living Cities

Professor **SATO, Haruki**
Department of System Design Engineering

A new vision of sustainable cities will be proposed as a collaboration study of two engineering fields: architectural design by Jorge Almazan and thermodynamics by Haruki Sato. Proposal of a reconstruction city-vision for Great East Japan Earthquake and tsunami disaster will be included.

Other Fields

Other Fields | Mechanics and Systems

BOOTH 65

Global Center of Excellence Program –Center for Education and Research of Symbiotic, Safe and Secure System Design–

Professor **UEDA, Toshihisa**
Department of Mechanical Engineering

Global COE "Symbiotic, Safe and Secure System Design" aims to develop the "System Design in Engineering", which has viewpoints of engineering science and systems engineering for complex engineering systems and educate PhD to solve issues in actual systems.

Other Fields | Electronic and Optical Devices

BOOTH 66 BOOTH 67

Global Center of Excellence Program: High-Level Global Cooperation for Leading-Edge Platform on Access Spaces

Professor **OHNISHI, Kouhei**
Department of System Design Engineering

- Basic Engineering Physics for Innovative Photonic/Electronic Device Creation
- Environment-embedded Device Technology
- Real-world and Real-time Network for Multi-dimensional Processing and Communication
- Perception and Expression Technology

*Selected for adoption in the Global COE Program (information, electricity, electronics), a competitive research fund initiated by the Japan Ministry of Education, Culture, Sports, Science and Technology in 2007.

Other Fields | Medical Engineering and Medical Welfare

BOOTH 68 BOOTH 69

EEG Analysis for Objective Evaluation Method without Questionnaire

Keio Patent Seminar

Associate Professor **MITSUKURA, Yasue**
Department of System Design Engineering

We proposed the EEG Analysis for Objective Evaluation Method without Questionnaire. In this study, we investigate Human-interest extraction, extract of concentration degree, driver dozing detection, extract how to feel and so on.

Other Fields | Administration Engineering

BOOTH 70

Human Factor Design of Products and Services for Improving Users' Experience

Keio Patent

Assistant Professor **NAKANISHI, Miwa**
Department of Administration Engineering

In the present scenario, when many well-developed products and services with no apparent differences among them are available, products that can get people's appreciation are of significant interest to those who provide products and services. We are researching design aspects of products and services by focusing on users' experience.

Panel Presentations

Medical Engineering and Medical Welfare | Information and Communication

PANEL 71

Activity Classification and Localization System Based on Doppler Frequency Data

Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce activity classification and localization system based on Doppler frequency information. In the proposed system Doppler frequency information is obtained using virtual antenna.

Environment and Biology | Drug Discovery, Regenerative Medicine and Biomedical Materials

PANEL 72

Protein Conformations Regulating Neurodegenerative Disorder

Associate Professor **FURUKAWA, Yoshiaki**
Department of Chemistry

For maintenance of life processes, protein needs to acquire correct three-dimensional structure. Mutations and/or environmental changes, however, cause protein misfolding and trigger abnormal interactions of proteins to form aggregates. We are investigating protein aggregation mechanisms, by which we want to reveal pathogenesis of human diseases caused by protein aggregation.

Electronic and Optical Devices | Information and Communication

PANEL 73

Control of Spin Dynamics and Its Application to Spin Devices

Associate Professor **NOZAKI, Yukio**
Department of Physics

We investigate new technologies to realize a low power consuming and high speed switching of electron spin. First, the experimental procedure to electrically detect the spin dynamics will be explained. Then, the change in spin dynamics caused by applications of not only microwave but also electric current will be presented.

Electronic and Optical Devices | Materials

PANEL 74

Controlling Material Properties by Terahertz Light Source

Associate Professor **WATANABE, Shinichi**
Department of Physics

Terahertz pulse is a novel light source to investigate material properties thanks to its unique frequency range. Recently, we obtained high-peak terahertz electric field pulse and demonstrated terahertz modulation of the optical properties in solids. We present such novel usage of the terahertz pulse for future applications.

Materials | Electronic and Optical Devices

PANEL 75

Nano-cylinder, Nano-coil Structured Thin Film

Associate Professor **OMIYA, Masaki**
Department of Mechanical Engineering

We aim to develop nanostructured thin films. The "nanostructure" and "function" of the films are strongly related, and it is very interesting to determine that relationship. We designed and fabricated the low-k dielectric thin film with high stiffness and low dielectric constant.

Materials | Mechanics and Systems

PANEL 76

Ionic Polymer Metal Composite (IPMC): Actuator & Sensor

Associate Professor **OMIYA, Masaki**
Department of Mechanical Engineering

Ionic polymer metal composites (IPMCs) consist of a thin polyelectrolyte membrane with electrodes plated. When a small electric field is applied, IPMCs show bending motion. IPMCs offer the advantages of ease in miniaturization, low densities, and mechanical flexibility. IPMCs have a wide range of applications, e.g., in MEMS sensors and artificial muscles.

Materials | Other Fields

PANEL 77

Physical Properties of Liquids and Glasses Controlled by Pressure

Research Associate **CHIBA, Ayano**
Department of Physics

It is possible to change physical properties of liquids and glasses by applying pressures. For some materials, applying pressures is a particularly useful way to control densities, and therefore refractive indices, We show our recent findings of a new way to control physical properties of liquids under pressure.

Information and Communication | Electronic and Optical Devices

PANEL 78

Broadband Wireless Communications and Mobile Adhoc Networks

Professor **SASASE, Iwao**
Department of Information and Computer Science

We show briefly our recent research results in the areas of broadband wireless communications and mobile adhoc networks to achieve more flexibility, safety and reliability based on users' QoS requirements.

Administration Engineering

PANEL 79

Fundamental Studies and Technological Applications on Artificial Neural Networks

Assistant Professor **SHINOZAWA, Yoshihisa**
Department of Administration Engineering

The goal of our research is to realize an artificial intelligent system as human brain. We study artificial neural networks, which is a computational model of human nervous systems. We introduce about fundamental studies and technological applications on artificial neural networks.