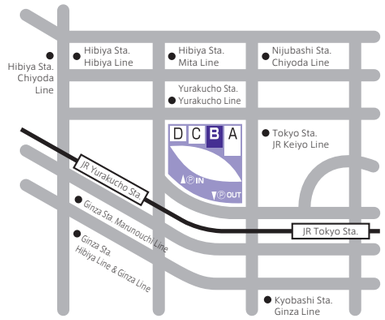
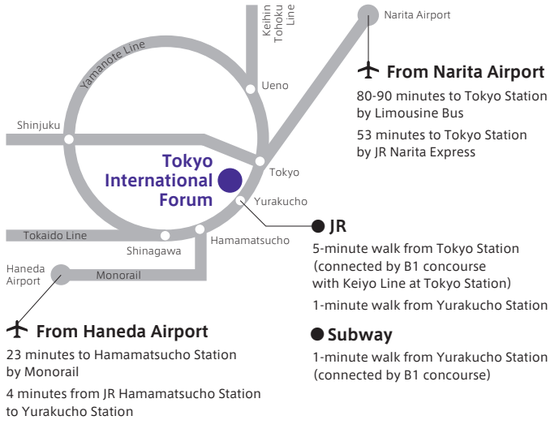
ACCESS

Tokyo International Forum

Hall B7 and Hall B5

3-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-0005 Japan
TEL : 03-5221-9000





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

● Subway

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

From Haneda Airport

23 minutes to Hamamatsucho Station by Monorail

4 minutes from JR Hamamatsucho Station to Yurakucho Station

Keio Leading-edge Laboratory of Science and Technology [KLL]

3-14-1 Hiyoshi, Kohoku-ku, Yokohama-shi, Kanagawa
223-8522 Japan
TEL : 045-566-1794 FAX : 045-566-1436
E-mail : ktm@kll.keio.ac.jp

www.kll.keio.ac.jp/ktm/

The 10th Keio Science and Technology Exhibition

KEIO TECHNO-MALL 2009

Shaping the Future through Science

10th Anniversary

2009.12.11 fri 10:00-17:00

Tokyo International Forum
Hall B7 and Hall B5

FREE OF CHARGE
Reservation is not necessary.

Welcome to KEIO TECHNO-MALL!

AOYAMA, Tojiro

Dean, Faculty of
Science and Technology
Chair, Graduate School of
Science and Technology
Keio University

The year 2008 commemorated the 150th anniversary of Keio University, and in 2009, the Faculty of Science and Technology of the university becomes 70 years old since its foundation. The Keio Leading-edge Laboratory of Science and Technology (KLL) was established in 2000 within the Graduate School of Science and Technology and has concentrated on three distinct missions: promoting collaboration between industry, government and academia; creating new science and technology; and fostering exceptional human resources. KLL fulfills its responsibilities by providing a research environment that extends beyond the boundaries of academia to embrace and promote close communication with industry and government.

KEIO TECHNO-MALL is a science and technology exhibition hosted by KLL and held annually every December. Professors, young researchers, graduate students, and collaborative researchers, all devoting their energy to research, take this opportunity to publicize the achievements of their research and development. Your opinions and advice are appreciated, because listening to voices from outside can often result in returning research findings to society that create new collaborative platforms between industry, academia and government.

Since the beginning in 2000, KEIO TECHNO-MALL has steadily grown and has marked its 10th anniversary this year, thanks to the enthusiastic support and dedicated interest by industry and government.

KEIO TECHNO-MALL 2009 includes a technology exhibition, a seminar series and a panel discussion in Hall B7 and Hall B5 of the Tokyo International Forum. One of the highlights this year is the panel discussion featuring KLL's activities in the past and the coming decades.

We welcome all of you and invite you to participate in KEIO TECHNO-MALL 2009 and look forward to conducting a frank exchange of views and opinions on the event or our research activities.

UEDA, Toshihisa

Director
Keio Leading-edge Laboratory
of Science and Technology

KEIO TECHNO-MALL has annually been held at the Tokyo International Forum since December 2000, when the Keio Leading-edge Laboratory of Science and Technology (KLL) was established. The exhibition, celebrating its 10th anniversary this year, was started in order to publicize and share the research achievements at Keio University. It provides a venue where visitors can directly feel and get in touch with leading-edge technologies and can benefit from the achievements through collaboration between industry and academia.

All the booths present exhibits or live demonstration of the latest technology or research achievements to help visitors gain in-depth understanding.

This year's KEIO TECHNO-MALL, under the theme "Shaping the Future through Science," will not only highlight the findings of years of research in the fields of science and technology, but will also display our enthusiasm for future research and development activities.

There will be two round table sessions in exhibition Hall B5, one entitled "A Society where humans and robots can coexist" and the other "Living in the wireless age." The experts in each field enthusiastically look forward to exchanging views with you on the current state of affairs as well as what the future of the research may encompass.

In the main exhibition Hall B7, President Atsushi Seike of Keio University and a number of top figures from industry and academia will discuss the past and the future of KLL under the theme of "KLL – Where we've been and where we're going." The panel will look at the ten-year history of KLL as well as contemplate the road of collaboration that industry and academia should pursue as the future unfolds. Your participation in the event is most welcomed.

Over the next ten years, KLL is determined to further broaden and strengthen its academic and research activities. One such endeavor, based on past experience, is the promotion of international collaboration between industry and academia. An information counter for visitors from abroad is available at KEIO TECHNO-MALL 2009.

Though December may be the busiest time of the year, we would be most obliged if you could spare some time to visit the exhibition, to carefully observe the exhibits which spark your interest and finally, to help pave the way to finding a new collaborative link that harmoniously cements industry and academia.

DISCOVER NEW CONCEPTS

Thinking power is the key to survive the era of dynamic change.
Witness the most innovative thinking power
at KEIO TECHNO-MALL 2009.
Unique ideas and new technologies
will definitely stimulate your thinking power.

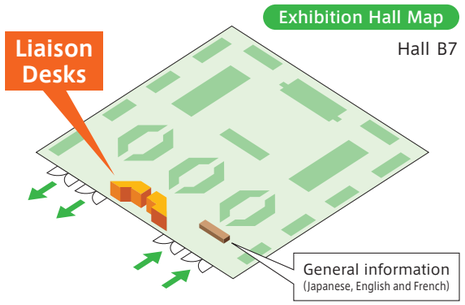
- Medical Engineering and Medical Welfare
- Material
- Machine and System
- Information Communication
- Electronic and Optical Devices
- Environment and Biology
- Architecture and Urban design
- Others

KLL's efforts for KEIO TECHNO-MALL

Link your technology to the others' at the visitor-friendly KEIO TEHCNO-MALL.

- ○ A wide variety of collaborative events
- ○ Service windows to give extensive information

Feel free to visit the inquiry counter.
We are willing to give you plenty of services ranging from in-depth consultation on collaborative project, information supply to guide to booths.

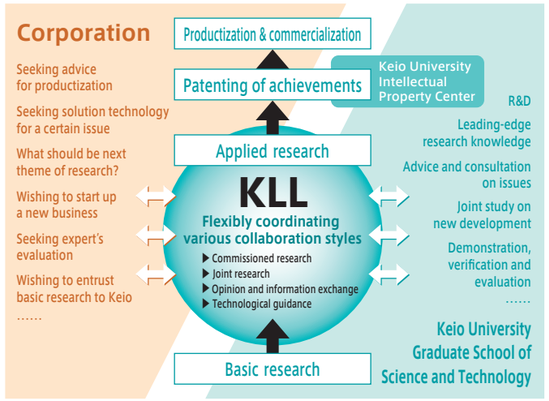


What is KLL?

Keio Leading-edge Laboratory of Science and Technology

KLL serves as the collaborative/social interface of the Graduate School of Science and Technology at Yagami Campus.

- ○ Advancing and assisting commissioned/joint research projects with industry or public organizations
- ○ Liaising as contact point providing coordination and publicity to promote new projects
- ○ Providing research space and environment to interact with society
- ○ Supporting nascent and unique researches



Questionnaire survey
for KEIO TECHNO-MALL 2008 visitors

KEIO TECHNO-MALL is admired by the business people and the researchers who seek their potential companion and wish to discover many possibilities.

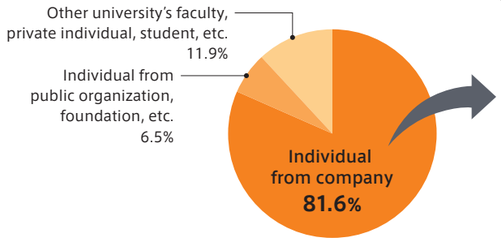
Visitors' comments

- ● I enjoyed a wide array of exhibitions--both already in field use and under study.
- ● I found a lot of outstanding ideas. I think collaboration with corporations would be very important to make the best use of them.
- ● Since I joined a company, I have strongly recognized the importance of research. I am really impressed by the level of what the students are learning.
- ● The exhibitions are very convincing that KLL has been vigorously promoting the academia-industry collaboration. Next time I hope to take a look at the research by companies and cooperative development.
- ● I saw a huge potential in these exhibitions. I believe combining these technologies will create new values.

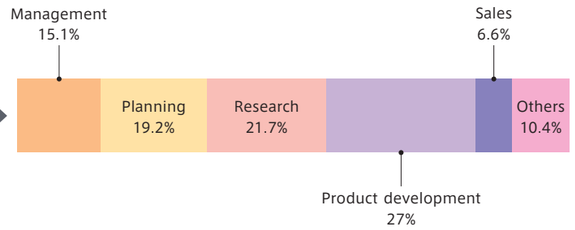
(Excerpt from KEIO TECHNO-MALL 2008 Questionnaire results)

Breakdown of visitors

(Ratios in proportion to the all onymous respondents)



Breakdown of work



KEIO TECHNO-MALL 2009

EVENT SCHEDULE
INTRODUCTION OF BOOTHS

KEIO TECHNO-MALL presents the followings:

1 Opportunity to meet new technologies and people

Encounter with exciting information that you would never get from the internet. Some research works may ring your bell even if they do not directly relate to your business or products.

2 Diversity and flexibility

Visit the exhibition booths and participate in the seminars to know their activities and get a real feel of potential connection to your project by having a talk with the researchers or touching actual devices. To help you make the potential a reality, KLL will offer flexible management and assistance necessary for contract settlement.

3 Publicizing your research achievements to your people

Take advantage of KEIO TECHNO-MALL, which academically and neutrally publicize research results, to show your company' people the achievements of their company's collaborative work--as a part of the R&D activities, and also to make them ready for commercializing the achievements.

4 Exploring potential of your product and technology

You may find that your product or technology can be of much help for some of the researches. Through KEIO TECHNO-MALL, KLL will gladly be involved in transition of people, things, funds and information, ultimately to offer an opportunity to make new products and new society.

EVENT SCHEDULE

KEIO TECHNO-MALL 10th Anniversary Symposium

10th Anniversary

Talk Session

KLL—Where we've been and where we're going.

—Shaping the Future through Science—

Place Center Stage, Hall B7　　Time 14:30—16:00

KLL and KEIO TECHNO-MALL, both celebrating their 10th anniversary hold a talk session to think about the theme of this year's KEIO TECHNO-MALL - Shaping the Future through Science. With a number of key figures from industry and those involved in administrative policy-making, we will look back KLL's activities over the past decade and discuss KLL's roles and potential and vision for the industry-academia collaboration in the future.

14:30	Opening	Host: UEDA, Toshihisa Director of KLL
14:35 — 14:45	Opening speech	SEIKE, Atsushi President of Keio University MAKABE, Toshiaki Vice-President in charge of research, Keio University
14:45 — 14:55	Speech	WATARI, Fumiaki Representative Director, Chairman of the Board, NIPPON OIL CORPORATION
14:55 — 15:05	Speech	MIYAKE, Kou Associate Senior Vice President Director, Information Sharing Laboratory Group NIPPON TELEGRAPH AND TELEPHONE CORPORATION
15:05 — 15:15	Speech	NAGANO, Hiroshi Professor, National Graduate Institute for Policy Studies
15:15 — 15:57	Talk session	WATARI, Fumiaki MIYAKE, Kou NAGANO, Hiroshi SEIKE, Atsushi MAKABE, Toshiaki AOYAMA, Tojiro Chair, Graduate School of Science and Technology, Keio University Facilitator: UEDA, Toshihisa
15:57 — 16:00	Closing speech	AOYAMA, Tojiro

Round Table Session

Hall B5 (Site A)

10:30 | 11:50　Round Table Session I

A Society where humans and robots can coexist

12:30 | 13:50　Round Table Session II

Living in the wireless age

Seminar

Hall B5 (Site B)

10:00 | 10:30

Innovative Laser Therapy from/by KEIO Univ., Japan.

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

10:40 | 11:10

A circulatory and efficient technology of removal and treatment for hazardous gases

TANAKA, Shigeru
Professor,
Department of Applied Chemistry

11:20 | 11:50

Screening and development of transcription factor-targeted medicine

UMEZAWA, Kazuo
Professor,
Department of Applied Chemistry

12:30 | 13:00

Wetprocess nanocoating and its applications - layer-by-layer sequential adsorption

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

13:15 | 13:45

Hybrid Surface treatment for metals

KOMOTORI, Jun
Professor,
Department of Mechanical Engineering

14:00 | 14:30

High Throughput Automated Experiment and Analysis System

FUNAHASHI, Akira
Associate Professor
HIROI, Noriko
Research Associate
Department of Biosciences and Informatics

14:45 | 15:15

Security System Using Radio Waves Based on Space-Time Signal Processing

OHTSUKI, Tomoaki
Professor,
Department of Information and Computer Science

Hall B5 (Site C)

Novel Protein-based Biotechnologies for Medical, Environmental and Nano Biosciences

DOI, Nobuhide
Associate Professor,
Department of Biosciences and Informatics

Molecular Design of drugs for suger-related diseses

MATSUBARA, Teruhiko
Assistant Professor,
Department of Biosciences and Informatics

Innovation of Multicolor Luminescene System based on Firefly Bioluminescence

NISHIYAMA, Shigeru
Professor,
Department of Chemistry

Influence of Mixing Conditions of Chemical System on the Behavior of Reaction

ASAKURA, Koichi
Professor,
Department of Applied Chemistry

Face-to-Face Communication by Ultra high-Speed Plastic Optical Fiber and High Definition Large Display

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

Visible light communication devices and applications

MATSUMOTO, Yoshinori
Associate Professor,
Department of Applied Physics and Physico-informatics

Human Support Space by Sensory Transmission Network

KATSURA, Seiichiro
Assistant Professor,
Department of System Design Engineering

See pp8～13 for the booths information with this symbol Seminar

INTRODUCTION OF BOOTHS

Characteristics of KEIO TECHNO-MALL

Easy to explore

Zoning by the level of collaboration*
(Evolution Zone of Advanced Technology and Discovery Zone of Inventive Technology)

*For details of zoning, see the booth layout on page 15.

Easy to understand

- Wealth of demonstration and exhibits
- Presence of teaching staff in each booth
- Seminars given by professors*
- Round table sessions*

*For the schedule, see page 6 "EVENT SCHEDULE".

《Symbols》

Keio Patent — This symbol indicates that the exhibit involves the technology patented by Keio University. Visit the inquiry counter for any interest in using the technology.

Seminar — This symbol indicates that a collaborative technology seminar will be held. See page 7 for the schedule.

Medical Engineering and Medical Welfare

Medical Engineering and Medical Welfare

BOOTH 48
Innovate Laser Therapy with photodynamic Therapy
Keio Patent

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

We propose less invasive and selective diagnosis and treatment that irradiate vessel lesion with a laser. Our exhibition will focus on our study on the diagnosis and treatment for atherosclerosis. We will also give you a demonstration of our laser-based short-time heating angioplasty system and thin-angioscope. These therapeutic systems are pre-clinical level and clinical-traials will be kicked-off soon.

Medical Engineering and Medical Welfare | Electronic and Optical Devices

BOOTH 19
Noncontact Evaluation System for Swallowing Function
Keio Patent

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

Elder people tend to have difficulty in swallowing foods since their throat movement gets weak and many of them get pneumonia due to such swallowing problem. Our lab has developed a noncontact and noninvasive system equipped with a special sensor, to make a quantitative evaluation of the surface of throat, ultimately to estimate the condition and age of the throat.

Medical Engineering and Medical Welfare | Electronic and Optical Devices

BOOTH 20
Monitoring System for Neonatal Respiration

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

Recently, about 60,000 babies are born before 37 weeks of pregnancy each year. These premature babies absolutely needs respiratory care. Our lab has developed a world's first non-contact and nonstraint system to monitor breathing of premature babies. Also, we have further been working on another approach to quantitatively evaluate "maturity in the breathing function of newborn babies."

Medical Engineering and Medical Welfare

BOOTH 47
Intra-vascular Laser Medical Applications
Keio Patent Seminar

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

We propose less invasive and selective diagnosis and treatment that irradiate vessel lesion with a laser. Our exhibition will focus on our study on the diagnosis and treatment for atherosclerosis. We will also give you a demonstration of our laser-based short-time heating angioplasty system and angioscope.

Medical Engineering and Medical Welfare

BOOTH 63
Understanding the brain, utilizing the brain
-Development of Neuroscience-based Rehabilitation Devices-
Keio Patent

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

Through a medi-tech collaboration with the School of Medicine and the Rehabilitation Center, we have carried out a study on how brain moves body. Aiming to provide technological support to the patients with dysmobility and to recover their neuromuscular function, we have been developing "electric instruments that work exactly as a brain thinks."

Medical Engineering and Medical Welfare

BOOTH 58
Screening and development of transcription factor-targeted medicine
Keio Patent Seminar

Professor **UMEZAWA, Kazuo**
Department of Applied Chemistry

The molecularly-targeted medicine has been attracting attention as a chemotherapy for cancer and inflammation with less side effects. Our lab has developed DHMEQ, a selective inhibitor against NF-kappa B, a transcription factor related to many diseases. We have pursued another study on inhibitors against other transcription factors through screening of natural substances and molecule design.

Medical Engineering and Medical Welfare | Machine and System | Information Communication

BOOTH 24
"Nano-Hapto" - Micro Manipulation System -
Keio Patent

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

We have been developing a fine manipulation system "Nano-Hapto", that returns haptic information to system operator, such as hardness and softness, which is produced in imperceptible manipulation made to a microsample viewed through a microscope. Visit our booth for demonstration of the Nano-Hapto system.

Material

Medical Engineering and Medical Welfare | Machine and System | Information Communication

BOOTH 33
Nano/Micro Human Five Senses Device
Keio Patent

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

Our booth will introduce a nanomicro device that simulates human's five senses or transmits information by stimulating these senses. A variety of hardware of new concepts based on the nanomicro forming technology--including eyeglasses-like eye-gaze tracking system, rewritable Braille display, gold and silver nanoparticle device which makes a highly sensitive taste/smell sensor--will be displayed.

Medical Engineering and Medical Welfare

BOOTH 14
Cell sorting and tissue regeneration using micro-biotechnology

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

Our Lab has been engaged in developing a device to physically stimulate cell groups at micro scale, as a fundamental technology targeting tissue engineering. Our booth will feature our recently developed micro chip for cell processing using dielectrophoresis.

Material

Material | Machine and System

BOOTH 54
Influence of Mixing Conditions of Chemical System on the Behavior of Reaction
Seminar

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

When a chemical reaction exhibits strong autocatalytic property, sometimes with presence of competitive reaction, the reaction behavior of chemical substances largely varies depending on their size and mixed state. We will explain how the difference in mixed state affects the behavior of chemical substances in which chirally autocatalytic amplification is taking place.

Material | Machine and System

BOOTH 40
Surface Engineering for Structural Steel
Keio Patent Seminar

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

A variety of surface treatment are applied to metals used for machines and structural objects in order for enhancing their performance such as fatigue strength, corrosion resistance, abrasion resistance, etc. We will introduce a new surface treatment process newly developed to achieve such purposes.

Material | Medical Engineering and Medical Welfare

BOOTH 46
Surface Engineering for Biomaterials
Keio Patent

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

Some metals are recently used for medical treatment, being implanted in human body for long years. Various efforts to develop safe materials that stand long period of use are underway. We will introduce a recently developed new surface treatment process.

Material | Environment and Biology

BOOTH 43
Super hydrophobic/ Super Oleophobic Coating
Keio Patent

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

Our lab has developed surface treatment that repels not only water but oil. Fabric, wood, metal and plastic coated with this treatment have additional properties such as antifouling property, chemical resistance, and reduction in friction. This treatment works as antimold, antirust and antimicrobial in life environment, and protective clothing. Its effect to reduce frictional force will be beneficial for industrial products.

Material | Information Communication | Electronic and Optical Devices | Environment and Biology

BOOTH 60
Layer-by-Layer Sequential Deposition Its Application
Keio Patent Seminar

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

We have developed a process of fabricating a nano-level ultrathin waterborne membrane at ambient temperature and pressure. Keio University owns a patent for the roll-to-roll type layer-by-layer self-assembly technique. This eco-friendly film fabrication method is available for various applications such as transparent conducting film and optical thin film on touch panels and coating on medical apparatuses.

Material

BOOTH 9
Defects in Graphite Crystals -Structure Analysis of Highly Oriented Pyrolytic Graphite

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

Defects in graphite greatly affect macroscopic properties such as elastic constant, thermal expansion coefficient, electric resistivity, magnetoresistance, magnetic susceptibility, etc. To develop a graphite material with high functionality, we have studied structure of defects in graphite. As the feature of our exhibition, we will introduce the graphite that serves as a neutron moderator inside atomic reactor.

Material

BOOTH 57
Delicious microbubble material
Keio Patent

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

Our lab has been engaged in the study on a variety of functional materials utilizing microbubbles. We will display panels introducing foods containing microbubbles or microdrops and the novel microparticle production technology using microbubbles. Microbubble-contained functional foods will also be displayed.

Material | Medical Engineering and Medical Welfare

BOOTH 62
Innovation of Multicolor Luminescene System based on Firefly Bioluminescence
Keio Patent Seminar

Professor **NISHIYAMA, Shigeru**
Department of Chemistry

We propose a multicolor luminescence material modeled on the firefly bioluminescence. Taking this chemical together with other drugs enables to track in which part of body these drugs pile up. This luminescence material is harmless to human body so that it can be used for finding cancer or a wide range of lesions, and is expected to be applied to achieve more effective therapy.

Material | Medical Engineering and Medical Welfare

BOOTH 61
Functionalization of polymer materials using diamond-like carbon (DLC)
Keio Patent

Associate Professor **HOTTA, Atsushi**
Department of Mechanical Engineering

Properly depositing diamond-like carbon (DLC) on a polymer material may modify property of the material, bringing in a possibility to enhance its functions. This technique enhances adhesive property of polymer surface and improves barrier property of bulk material against gas and water. These advantages will benefit beverage industry in terms of improving gas impermeability and medical industry in terms of drug release.

Machine and System

Machine and System

BOOTH 37
Application of Electro-adhesive elastomer to machine system

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

The electro-adhesive elastomer that we have developed is a functional material to electrically control surface adherence. Applying a sheet of electro-adhesive elastomer on the surface of a device instantly adds a brake mechanism, a fixturing mechanism, or a damping mechanism to the device. Our booth will demonstrate the electro-adhesire effct and various devices using electro-adhesive sheet.

Machine and System | Environment and Biology

BOOTH 50
New concept of miing devices

Keio Patent

Professor UEDA, Toshihisa
Department of Mechanical Engineering

When mixing different fluids together, placing them in a turbulent state is effective to advance mixture. We have developed a non-element mixer for high-viscose fluid that is hardly placed in a turbulent state, or fluid that should not roughly be sheared, such as blood with substances like red cells.

Machine and System | Environment and Biology

BOOTH 51
New trend of Combasion Science Technology

Keio Patent

Professor UEDA, Toshihisa
Department of Mechanical Engineering

Combustion is important as one of the major thermal energy sources from the viewpoint of energy saving and environmental conservation. Also, it has recently gained recognition as a technology to generate a variety of substances. We will exhibit recent achievements in combustion engineering and technology and possible new applications.

Machine and System | Information Communication | Electronic and Optical Devices | Others

BOOTH 44
Haptic Robot Hand (1)

Keio Patent

Professor OHNISHI, Kouhei
Department of System Design Engineering

Haptic robot hand is a multiple-DOF robot. It has 5 DOF in each master-slave robot and 10 axes in total. This robot hand transmits force sensation to remote places with bilateral control. Moreover this robot has close DOF as human's hand and it could be possible to extract human motion. This robot technology achieve precise remote operations and preserration of craftsman's skill based on force information.

Machine and System | Information Communication | Electronic and Optical Devices | Others

BOOTH 65
Haptic Robot Hand (2)

Keio Patent

Professor OHNISHI, Kouhei
Department of System Design Engineering

Haptic robot hand is a multiple-DOF robot. It has 5 DOF in each master-slave robot and 10 axes in total. This robot hand transmits force sensation to remote places with bilateral control. Moreover this robot has close DOF as human's hand and it could be possible to extract human motion. This robot technology achieve precise remote operations and preserration of craftsman's skill based on force information.

Machine and System

BOOTH 36
New Technology of Micro-Nano Machining

Keio Patent

Assistant Professor KAKINUMA, Yasuhiro
Department of System Design Engineering

We have been engaged in developing a novel micro/nano fabrication technologies, such as micromachining under liquid nitrogen temperature and biochemical nano fabrication. Also, in order for intelligentizing machining centers, we do sensorless cutting force monitoring and cutting status laser sensing--which will be demonstrated using samples in our booth.

Machine and System | Medical Engineering and Medical Welfare | Information Communication

BOOTH 39
"Mobile-Hapto" - Haptic Vehicle System -

Keio Patent

Assistant Professor KATSURA, Seiichiro
Department of System Design Engineering

Developing an ability to safely communicate with humans and environment is critical for the future intelligent machine systems and robots designed for human support. Our lab has been developing "Mobile-Hapto", a system to transmit tactile information of a mobile object. This system will be demonstrated in our booth using the actual system.

Machine and System

BOOTH 35
Power Assisted Control Devices for Human Motion

Professor MURAKAMI, Toshiyuki
Department of System Design Engineering

Electric vehicles and wheelchairs, to assist people's efficient and auxiliary movements, are playing a very important role in everyday life. Many of these instruments use motors. Safety is enhanced and more control functions can be added to these instruments thanks to the high response and high torque control characteristics of motors.

Information Communication

Information Communication

BOOTH 1
Automatic Measurement System for Hand Dimentions "HandMetrix"

Associate Professor AOKI, Yoshimitsu
Department of Electronics and Electrical Engineering

We often handle things with our hands. Hand sizing is dispensable for designing easy-to-use products. HandMetrix consisting of a scanner and a PC is a system to automatically measure two-dimensional size and thickness of fingers and hand and finger joint circumference. Visit our booth and know your hand size.

Information Communication

BOOTH 18
Multi-Human tracking Considering Occlusion and Crowded Situations

Associate Professor AOKI, Yoshimitsu
Department of Electronics and Electrical Engineering

The technology to trace human movements has widely been used for applications such as monitoring system or picture analysis in the area of sports. The conventional systems had had a difficulty in tracing movements of individuals in a group of people closely distanced to each other. However, this newly developed system is designed taking crowded situation into account. We will demonstrate how the system traces movements of pedestrians and soccer players.

Information Communication

BOOTH 13
High Performance Computation Using Game Machines and GPUs

Professor AMANO, Hideharu
Department of Information and Computer Science

There is a recent trend that the processors originally designed for computer games or image processing are diverted for versatile computing. Our booth will exhibit the cell cluster consisted of an array of sophisticated gaming machines with cell processors, and applications of the computing system using a number of GPU boards.

Information Communication

BOOTH 28
Information Revivalization with Portable Robots

Keio Patent

Associate Professor IMAI, Michita/Research Associate OHMURA, Ren
Department of Information and Computer Science

More people today are transmitting information through wide use of internet. Our lab has been engaged in the study on easy and enjoyable information transmission. Come see our small robot and know about information display using robotics.

Information Communication

BOOTH 30
Localization System Using Sensor Networks

Keio Patent

Professor OHTSUKI, Tomoaki
Department of Information and Computer Science

A position estimation system using sensor network will be featured in our exhibition. This system is usable indoors where GPS is out of service and also in environments with obstructs without prior measurements.

Information Communication

BOOTH 34
Security System Using Radio Waves Based on Space-Time Signal Processing

Keio Patent | Seminar

Professor OHTSUKI, Tomoaki
Department of Information and Computer Science

The security system using radio waves, based on space-time signal processing, will be introduced in our booth. This system divides a received signal into intensity components and directional components. If there is no change in the signal propagation environment, the system then detects events such as intrusion based on the stable directional components. This method thus achieves low false detection rate. We will show practical applications of the system, such as monitoring, theftproof, and alarm for mislaid properties.

Information Communication

BOOTH 11
Scent Presentation for High Realistic Space

Professor OKADA, Kenichi
Department of Information and Computer Science

There has been an effort to use scent as a medium. Scent information cannot properly be conveyed by simply emitting it because of scent fatigue and influence by remained scent. We have therefore developed a technology to emit scent at micro pulse duration and switch scents at extremely short intervals. Another development of ours is a tool, designed considering human's olfactory characteristics, to add scent to moving images and virtual reality spaces.

Information Communication

BOOTH 12
Proposal and Application of Identification Algorithm for DiamondTouch

Professor OKADA, Kenichi
Department of Information and Computer Science

On the tabletop interface, there may be false identification of operators of digital objects and physical objects. We have developed a basic algorithm to reduce such false identification and allow more intuitive operation. Also, we have developed an application based on this algorithm.

Information Communication | Medical Engineering and Medical Welfare | Machine and System

BOOTH 23
"Tele-Hapto" - Haptic Broadcasting System -

Keio Patent | Seminar

Assistant Professor KATSURA, Seiichiro
Department of System Design Engineering

The haptics technology dealing with "tactile perception" has been recognized as a promising technology and as the third multimedia information following auditory perception and visual perception. Our lab has been developing "Tele-Hapto", a technology for multidirectionally transmitting tactile information present in remote location. We will demonstrate transmission of tactile information using Tele-Hapto.

Information Communication

BOOTH 3
Broadband Wireless Communications

Keio Patent

Professor SASASE, Iwao
Department of Information and Computer Science

We will give you a summary of our latest study on a safe and reliable digital wireless communication system--high speed and large capacity for sure--that flexibly fulfills a wide variety of quality demands for personalization and customization of users' communication environment.

Information Communication

BOOTH 26
OFDM Receiver with Fractional Sampling

Keio Patent

Associate Professor SANADA, Yukitoshi
Department of Electronics and Electrical Engineering

MIMO is recently attracting attention as a technology for wireless communication. It increases communication speed and improves communication property by using more than one antennas at the receiver and transmitter. However, using more than one antennas is a bottleneck in miniaturization of terminals. MIMO adopts fractional sampling to accomplish path diversity while preserving communication quality and achieving miniaturization of terminals at the same time.

Information Communication

BOOTH 15
New file exchange method and evaluation of peer's trust for P2P network

Associate Professor SHIGENO, Hiroshi
Department of Information and Computer Science

P2P network allows equal communication and information exchange between computers (users). P2P file exchange is a representative example of the service using P2P network. We will explain about the methods to efficiently exchange P2P files and to numerically convert the reliability of network users.

Information Communication

BOOTH 4
Integrated communication network technology of visible light communication

Professor NAKAGAWA, Masao
Department of Information and Computer Science

Our exhibition will be a position detection system using visible light communication technology and an optical LAN communication equipment. These systems have been developed through the study entrusted by the National Institute of Information and Communications Technology (NICT) as a part of the research and development of advanced communication and broadchasting technologies, by the collaborative group consisted of Mr. Masao Nakagawa, professor; Mr. Yoshinobu Matsumoto, assistant professor; Mr. Shinichiro Haruyama, professor; NEC; and Nakagawa Laboratories, Inc.

Information Communication

BOOTH 5
Robot Network with Self-organizing function

Associate Professor NISHI, Hiroaki
Department of System Design Engineering

Each robot conducting cooperative operations, under control by wireless sensor network, at disaster site needs to maintain communication status. We will introduce and demonstrate a mobile robot network, that robustly maintains inter-robot communication based on the given control parameters acting as communication quality index.

INTRODUCTION OF BOOTHS

Information Communication | Machine and System

BOOTH 41 Energy Management Sensor Network for General Households

Associate Professor **NISHI, Hiroaki**
Department of System Design Engineering

Securing the supply-and-demand balance on a real time base is effective for improving energy use efficiency and energy saving. The Energy Management Sensor Network that we propose performs distributed cooperative control on combined groups of houses. We will demonstrate this household system to show the data measured by the systems currently in service and the results of data analysis.

Information Communication

BOOTH 42 Password hacking by using keyboard vulnerability

Associate Professor **NISHI, Hiroaki**
Department of System Design Engineering

Side Channel Attack to illegally obtain a cipher or a password through physical information such as electromagnetic wave and power consumption has been a serious problem. We will give you a demonstration of keyboard hacking for which no practical solution has been found. Keyboard hacking is an act of illegally obtaing a log-in password from sound or leaking electromagnetic wave.

Information Communication

BOOTH 27 Responsive Multithreaded Processor

Keio Patent

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

We will demonstrate an RMT processor. This single chip is an aggregation of the following devices required to form a distributed realtime system: realtime processing function (RMT PU), realtime communication unit (Responsive Llink), computer peripherals (PCI, IEEE1394, etc.), and control peripherals (PWM, etc.).

Information Communication

BOOTH 6 Active Optical Access Network -ActiON-

Keio Patent

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

We propose Active Optical Network (ActiON) as the next generation access network to replace PON. Compared to PON, this new network enables to quadruplicate the number of users and double transmission distance by using optical switches. Our booth will introduce a data distribution system based on ActiON for different types of users and data contents.

Information Communication

BOOTH 7 Intelligent Cloudnetwork Technology

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

In the cloud computing, high speed transmission of large volume data is vital. Our lab proposes a method, based on the SCTP parallel transmission, to prepare a large bandwidth path essential for large data transmission. Use of GMPLS allows anonymous selection of route to use for parallel transmission.

Information Communication

BOOTH 8 Ubiquitous Grid Network

Keio Patent

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

Our lab has carried out a study on the ubiquitous grid network, which provides new services when "something" such as camera and screen display is connected to the network, while simulating the next generation ubiquitous environment based on the optical broadband network to which a variety of things are connected.

Electronic and Optical Devices

Electronic and Optical Devices

BOOTH 29 Polymer Optical Devices for Tera-bit Optical Interconnections

Keio Patent

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

Our booth will introduce polymer parallel optical waveguide enabling board-level optical interconnection and carbon nanotube doped polymer optical waveguide device. This novel optical waveguide enables extremely high density parallel interconnection with terabit throughput, which is required inside of high-end servers.

Electronic and Optical Devices

BOOTH 17 Development of nanoCMOS Process Simulators

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

Fabricating a leading edge semiconductor silicon chip in which more than one million transistors are installed requires to simulate the fabrication process and property of the elements to be produced during the process on a a computer. We will introduce our effort to improve performance of the design simulator.

Electronic and Optical Devices | Medical Engineering and Medical Welfare | Environment and Biology

BOOTH 2 Praseodymium multicolor lasers

Professor **KANNARI, Fumihiko**
Department of Electronics and Electrical Engineering

Fluoride crystal and fluoride glass, doped with Pr^{3+} ion, are characterized by optical transition to red, orange, green and blue. With blue GaN semiconductive laser which has recently been developed for application to projectors, we have developed a multi-colored laser in visible wavelength range.

Electronic and Optical Devices | Information Communication

BOOTH 25 Face-to-Face Communication by Ultra high-Speed Plastic Optical Fiber and High Definition Large Display

Seminar

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

Taking advantages of the ultra high-speed plastic optical fiber and high definition and large display, we have been aimed at the creation of Face-to-Face communication industry which is full of presence, that had never been achieved by simply applying the conventional internet technology. The latest results of reserch including photonics polymer are introduced.

Environment and Biology

Environment and Biology

BOOTH 52 Healthcare and Environmental Sensing Chips Using Inkjet Printing Technology

Keio Patent

Associate Professor **CITTERIO, Daniel**/Professor **SUZUKI, Koji**
Department of Applied Chemistry

The inkjet printing technology is characterized by its high efficiency in material use among other mass production methods and accomplishes flexible processing and production for different purposes. Based on this technology, we have developed a paper or plastic-based sensor for medical diagnosis such as urine testing and for environmental testing such as water quality test.

Environment and Biology

BOOTH 53 Chemical Sensors for Taste, Environmental and Clinical Analysis

Keio Patent

Professor **SUZUKI, Koji**/Associate Professor **CITTERIO, Daniel**
Department of Applied Chemistry

A "simpler, faster and more advanced" chemical sensor for the areas of food, environment, and medical measurement is what we have been developing. We will introduce the followings:
(1) A smart taste sensor analyzing with low accumulated data
(2) MRI contrast agent for lesion detection
(3) Fluorescent dye for bioimaging

Environment and Biology | Material

BOOTH 59 Anmonium Ion Sensor

Keio Patent

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

We will show our newly developed portable instrument for continuously measuring ppm-order ammonium ion in water and a sensor with sensing membrane. An ammonium gas sensor will also be exhibited.

Environment and Biology

BOOTH 31 The application technology of environmental analysis by diffusion scrubber method

Keio Patent

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

Trace standard gas is prepared by diluting high density standard gas in a cylinder with zero gas. In our booth, you will be introduced to a simplified system to directly prepare trace standard gas without heavy high pressure gas cylinder. Our exhibition will also feature an air refiner based on the diffusion scrubber method, to prepare zero gas that is essential for environmental measuring.

Environment and Biology

BOOTH 32 A circulatory and efficient technology of removal and treatment for hazardous gases

Keio Patent Seminar

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

We will show a system to efficiently remove VOC in exhaust gas. This system sprinkles remover to absorb VOC and the VOC-contained remover is recycled. The other feature of our exhibition will be an air refiner using TiO2 photocatalyst to remove hazardous gas inside building, which is based on the "Pleated diffusion scrubber" and "Geared diffusion scrubber".

Environment and Biology

BOOTH 55 Development of molecular-targeted and protein photo-degrading agents

Keio Patent

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

We will introduce molecule design, chemical synthesis, and functions of novel molecular-targeted drugs targeting specific proteins related to intractable diseases such as cancer and AIDS and photo-degrading these proteins to inhibit their functions. Also, a report will be made on the advantages of the photosensitive molecular-targeted drugs in the next generation photodynamic therapy.

Environment and Biology

BOOTH 10 High Throughput Automated Experiment and Analysis System

Seminar

Associate Professor **FUNAHASHI, Akira**/Research Associate **HIROI, Noriko**
Department of Biosciences and Informatics

Measuring molecular dynamics in a cell in detail and over time is vital for creating mathematical models for biochemical reaction that regulates physiological activities. However, there is a practical limit to accurate experiments and continuous data collection by humans. We are aiming to build a fundamental technology for computer-aided automatic experiment and analysis systems using microfluidic technology.

Environment and Biology

BOOTH 56 Enzymatic synthesis of green polyesters

Keio Patent

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

Use of renewable resources and chemical recycle are the keys for the next generation plastic. Our booth will report on enzymatic synthesis and property of green polyester--a material fulfilling these environmental demands. Besides this, polyester type biological elastomer, thiol-containing polyester for which cross-linking can be made or removed, and new polyester urethane will be introduced.

Architecture and Urban design

Architecture and Urban design

BOOTH 16 GPS on Every Roof

Associate Professor **OGUNI, Kenji**
Department of System Design Engineering

Our lab has been developing a system to grasp the situation of house collapse after an earthquake. A wireless sensor node with GPS is installed on the roof of each house and information about the position of the roof before and after an earthquake is collected through sensor network. Our booth will show you the sensor node, which is the key of the system and accomplishes "low cost and high precision" at the same time.

BOOTH LAYOUT

Others

Others | Environment and Biology

BOOTH 49 High purity Hydrogen production device

Keio Patent

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

Development of apparatuses to safely supply high purity hydrogen such as fuel for fuel cells and carrier gas for analyzer is long awaited. Our compact, portable hydrogen reformer to generate hydrogen from methanol can supply high purity hydrogen with other compound (e.g. Carbon monoxide) content under 1ppm.

Others | Machine and System | Environment and Biology | Architecture and Urban design

BOOTH 64 Global Center of Excellence Program -Center for Education and Reseach of Symbiotic, Safe and Secure System Design-

Program member **UEDA, Toshihisa**
Global COE Program

We will give you a summary of the education and research activities promoted by the Global COE Program, "Center for Education and Research of Symbiotic, Safe and Secure System Design". In this COE program, complex engineering systems involving a wide variety of factors such as environment and safety are designed from both perspectives of elemental technology and system engineering.

Others | Machine and System | Information Communication | Electronic and Optical Devices

BOOTH 45 Global Center of Excellence Program -High-Level Global Cooperation for Leading-Edge Platform on Access Spaces

Program leader **OHNISHI, Kouhei**
Global COE Program

Let us explain about our study (themes listed below), education program for the doctoral course students, and international collaboration.

1. Basic Engineering Physics for Innovative photonic/Electronic Device Creation
2. Environment-embedded Device Technology
3. Real-world and Real-time Network for Multi-dimensional Processing and Communication
4. Perception and Expression Technology

(The above themes have been adopted as Global COE Programs, in the areas of information, electricity and electronics. This competitive research fund-based programs were started in 2007 by Japan's Ministry of Education, Culture, Sports, Science and Technology.)

Others

BOOTH 38 A New chord estimation method and its applications

Keio Patent

Associate Professor **SAITO, Hiroaki**
Department of Information and Computer Science

We will introduce the spectrum dip method (SD method), a novel method to estimate a chord from audio signals, and applications of the method. Contrary to the conventional methods, this method estimates chords from frequency bands with no sound. The SD method is robust against the increased number of tones of a chord. This method is also superior in that it requires less calculation.

Others

BOOTH 21 A Study on the Methodology for Product Designs: the Use of Robust Parameter Design, Supersaturated Experimental Design and Response Surface Method

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

We will explain about the following methodology of product design: design variables (cotrol factors), noise factors, quality characteristics system, robust parameter design, experimental design, response surface method, and design solution search. Also, we will introduce our study on the efficient supersaturated response surface design in consideration of large-scale simulation.

Others

BOOTH 22 Customer Satisfaction Index Model and Methodology for Service Quality Improvement

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

The feature of our exhibition will be the results of our study on the indexation model of customer satisfaction with regard to professional baseball games and TV drama. We will also introduce the method how the service quality was improved based on the outcomes of the survey conducted at the professional baseball stadium and the J-league soccer stadium in 2009.

Others

BOOTH 66 Creative technology for comfortable furniture design

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

Home furnishings such as chair and mattress make people unconsciously anchor their postures, which as a consequence can be fatigue or comfort. People take certain postures under certain circumstances--What kind of products do they want under such circumstances and why? Our booth will exhibit the systems to sound out real feeling of people and introduce the technologies behind popular products.

Others

PANEL Sensing technologies for sustainable society

Professor **HONDA, Satoshi**
Department of Applied Physics and Physico-informatics

You will be explained about the safety/security-oriented diagnosis systems based on the signal processing technology: (1) a malfunction diagnosis system using acoustic signals from the gas engine for power generator, (2) a marine measurement system using Synthetic Aperture Sonar (SAS), (3) a tomography system using electromagnetic induction, and (4) a pipe-wall thickness estimation system.