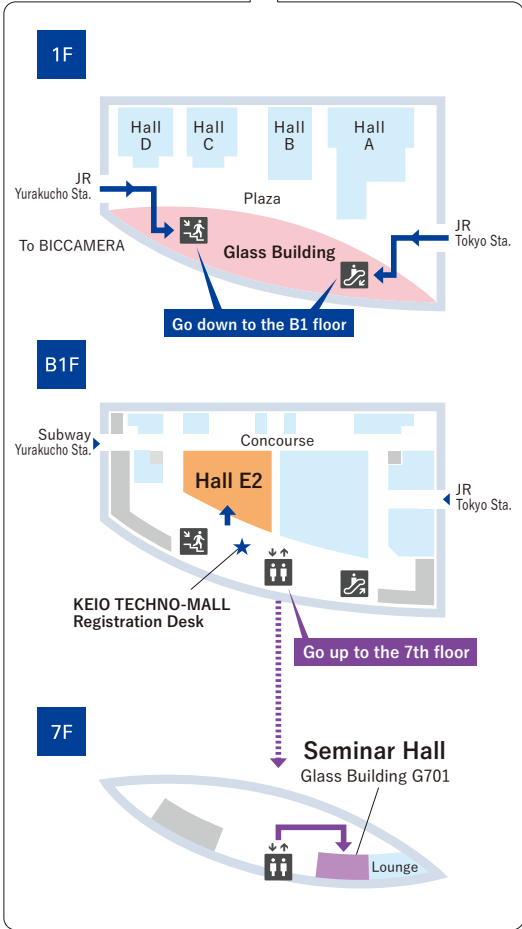
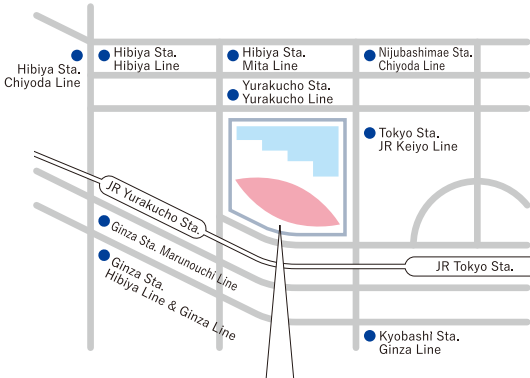


ACCESS

**Tokyo International Forum
B2F (Hall E2)**

3-5-1 Marunouchi, Chiyoda-ku, Tokyo, Japan
Tel: +81-3-5221-9000



18th Annual Keio Science and
Technology Exhibition

**KEIO
TECHNO
MALL
2017**

More Partnerships,
More Dreams



Organized by

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

3-14-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa
223-8522, Japan
Tel: +81-45-566-1794 Fax: +81-45-566-1436
E-mail: ktm@kll.keio.ac.jp



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

Supported by Nikkan Kogyo Shimbun Ltd.

12.15 [fri] 10:00-18:00

**Tokyo International Forum
B2F (Hall E2)**

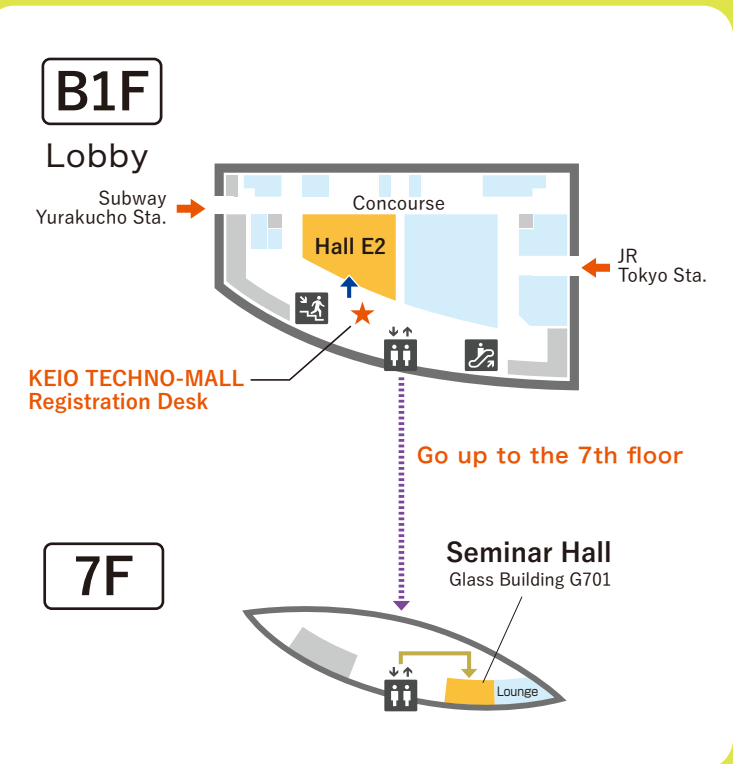
Admission
Free

For Event Schedules, Please refer to the end.



KEIO
TECHNO
MALL
2017

Floor Map



- Cafe Area
- Live broadcast of the Events
- Request Box
- Questionnaire

- Materials**
- Biomedical**
- Society & Environment**
- Mechanics**
- Electronics**
- Information and Communication**
- Other Fields**
- Chemicals Group Exhibit Zone**
- Creativity Initiative Zone**
- Medical-Engineering Collaboration Zone**

Encounters with
researchers and
subjects of research

Publicizing of
research results

KEIO TECHNO-MALL
provides four platforms

Expanded scope
and greater
flexibility

Search for product /
Technology
possibilities

● 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.

● 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, Keio Leading-edge Laboratory of Science and Technology (KLL) will respond flexibly to requests for advice about procedures and contractual aspects.

● Publicizing of research results

With the KEIO TECHNO-MALL being a venue for the objective and academic publication of research results, you can demonstrate the outcomes of industry-academia collaboration, and you can utilize it for business expansion.

● 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.

KEIO
TECHNO
MALL
2017

Program of Events

Outline of Exhibits

Main Event

13:30-14:30

〈Special Keynote Speech〉

View of Japan, the World and Beyond from Space

The view from space as seen by the eye of an orbiting satellite has become an integral part of weather forecasting and geolocation, disaster prevention and mitigation, and agriculture, forestry, and fishery, and its use is expanding to many other sectors. It also provides an opportunity for us all to consider the future as seen from space in concert with the progress in space exploration and travel.



YAMAZAKI, Naoko

Astronaut /
Member of Japan Space Policy Committee

©MIWAKATOH

Chairperson:



YAMANAKA, Naoaki

Professor,
Dept. of Information and Computer Science,
Faculty of Science and Technology

Chairperson:



MITSUKURA, Yasue

Associate Professor,
Dept. of System Design Engineering, Faculty of Science and Technology

Round-table Session I

11:00-12:30

The Role of Keio Faculty of Science and Technology: Industrial Expectations

Three distinguish alumni of Keio University will discuss their expectations for future directions of the science and engineering education and research at Keio University.



TAMATSUKA, Genichi

President & CEO,
Hearts United Group Co., Ltd.



KOBAYASHI, Kazutoshi

President & CEO,
KOSE Corporation



IKUTA, Hisataka

President,
CEO & COO,
Mikuni Corporation



ASAKURA, Kouichi

Professor,
Dept. of Applied Chemistry, Faculty of Science and Technology



Facilitator:

ITOH, Kohei

Dean, Faculty of Science and Technology, Keio University/
Professor,
Dept. of Applied Physics and Physico-informatics,
Faculty of Science and Technology

Round-table Session II

15:00-16:30

Bringing the Keio FST concept to life through basic research

—KiPAS in its first four years

Highlights of progress at KiPAS in its first four years as a center for seminal advances in basic research with a perspective on science and technology twenty years from now, and a roundtable discussion with principal investigators on the importance of basic research and related responsibilities of the university.

FST: Faculty of Science and Technology

KiPAS: Keio Institute of Pure and Applied Sciences



NAGASAKA, Yuji

Professor,
Dept. of System Design Engineering, Faculty of Science and Technology
Chair of the KiPAS steering committee



OHASHI, Yoichi

Professor,
Dept. of Physics, Faculty of Science and Technology
KiPAS Principal Investigator



NAKAJIMA, Atsushi

Professor,
Dept. of Chemistry, Faculty of Science and Technology
KiPAS Principal Investigator



BANNAI, Kenichi

Associate Professor,
Dept. of Mathematics, Faculty of Science and Technology
KiPAS Principal Investigator



USHIBA, Junichi

Associate Professor,
Dept. of Biosciences and Informatics,
Faculty of Science and Technology
KiPAS Principal Investigator



Facilitator:
SAIKAWA, Yoko

Associate Professor,
Dept. of Applied Chemistry,
Faculty of Science and Technology

Venue Seminar Hall
(Glass Building 7F G701)

Seminar I

10:30-12:30

National Logistic Data Center and Connected Industry



MATSUKAWA, Hiroaki etc.
Professor,
Dept. of Administration Engineering,
Faculty of Science and Technology

Seminar II

13:00-16:00

Human Sensing for Super Mature Society: Towards Sports and Rehabilitation

Speech ①



SAITO, Hideo
Professor,
Dept. of Information and
Computer Science,
Faculty of Science and Technology

Speech ②



MIKAMI, Dan
Senior Research Scientist,
NTT Media Intelligence Laboratories/
Visiting Associate Professor,
Graduate School of Science and
Technology, Keio University

Speech ③



SUGIURA, Yuta
Research Associate,
Dept. of Information and
Computer Science,
Faculty of Science and Technology

Speech ④



TADA, Mitsunori
Group Leader,
Digital Human Research Group,
Human Informatics Research Institute (HIRI),
National Institute of Advanced
Industrial Science and Technology (AIST)

Speech ⑤



FUJITA, Koji
Assistant Professor,
Dept. of Orthopaedic and
Spinal Surgery, Graduate School of
Medical and Dental Sciences,
Tokyo Medical and Dental University

Seminar III

16:30-17:30

A New Measurement Technology for PM2.5 in the Atmosphere

Speech ①

The Measurement of Acidity (pH) of
PM2.5 and the Present Situation Acidic
Particles in Beijing, China



TANAKA, Shigeru
Professor,
Dept. of Applied Chemistry,
Faculty of Science and Technology

Speech ②

“Smart-Monitoring” for
Concentration of PM2.5



YANG, Liu
Project planning &
Development Department,
Sales Department 1,
Tokyo Dylec Corp.

Speech ③

Continuous monitoring of PM2.5 mass and
the elemental concentration by using
Automatic Particulate Monitor (PX-375) with
Beta-ray attenuation and X-ray fluorescence



KAGAWA, Akifumi
Process & Environmental
Instrument R&D Dept.,
HORIBA, Ltd.

Chairperson:



FUJIWARA, Masahiko
Industry-Academia-Government
Relations Office,
R&D Planning Center,
Research & Development
Division, HORIBA, Ltd.

For Event Schedules, please refer to the end.

*Please note that content, etc. of events or seminars are subject to change due to unavoidable circumstances on the day of the exhibit.

Outline of Exhibits

□ Special symbols used in the following
exhibition descriptions



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



Short Presentations;
See last page for the timetable.



Seminars;
Details shown on Page 08.



Research Project at Keio Innovation Foundry (KIF)
as one of Keio University Faculty of Science and
Technology 75th Anniversary Commemorative Project.
For further information, please see KIF web site.
<http://www.kll.keio.ac.jp/kif/>

Materials

Materials

Electronics

BOOTH
1

Internal strain imaging of rubber materials

Associate Professor **WATANABE, Shinichi**
Assistant Professor **OKANO, Makoto**
Department of Physics



In this exhibition, we will introduce a novel internal strain imaging technology of
rubber material using terahertz polarization measurement. Currently, our
technology attracts attention as a new non-destructive inspection technology.

Materials

BOOTH
2

Super-hydrophobic, Slippery, and Anti-fouling coating



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



(1) Newly developed anti-fouling coating that shows easy removal characteristics
for water, food or beverages and (2) Transparent coatings that slip oil and liquid
are demonstrated. These technologies will reduce environmental problems and
promote energy saving. Practical applications are presented.

Materials

BOOTH 3 Advanced and transparent anti-fouling coating



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



Controlled of surface structure for anti-fouling coating.
 (1) High durability and high transparency.
 (2) Repelling and slipping surface against tiny water droplet.
 (3) Application for wide range such as mirror and camera lens etc.
 Practical applications are presented.

Materials

BOOTH 6 Surface Engineering for Metals



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



Metallic materials, such as carbon steel, stainless steel and titanium alloys, are required to have certain desirable properties for practical applications. The aim of our laboratory is to develop a new surface modification processes.

Materials

BOOTH 7 Development of the synthesis system for functional nanocluster dispersion

Professor **NAKAJIMA, Atsushi**
Department of Chemistry



Nanoclusters composed of less than thousands of atoms have potential to novel functional materials based on their unique, size specific properties. We have developed a synthesis system for functional nanocluster dispersion by collaboration with Ayabo Corp.. We introduce recent activity of the development of apparatus and synthetic applications for novel nanomaterials.

Materials

BOOTH 8 Fine synthesis of ligand-protected metal nanoclusters by ultra-narrow microfluidic reactors and catalytic applications

Professor **NAKAJIMA, Atsushi**
Department of Chemistry



Nanoclusters exhibit remarkable functions dependent on their size. We have developed a novel microfluidic reactor with ultra-narrow reaction channels by corroboration with Toshiba Machine Co. Ltd. for fine chemical synthesis of ligand-protected metal nanoclusters. We demonstrated the fine synthesis of metal nanoclusters protected by organic polymers and their applications to catalysis.

Materials

Biomedical

BOOTH 9 Development of new medical devices using Diamond-Like Carbon coating

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering



Recently, the biocompatible materials have become more important with the development of medical technology. Diamond-Like Carbon (DLC) coating receives much attention as one method of improving biocompatibility of medical devices. We introduce our approaches to the development of DLC coatings and the application of them to medical devices.

Materials

BOOTH 10 Development of lower-cost and higher-durability semiconductor using Diamond-Like Carbon film

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering



Diamond-like carbon (DLC) is a high durable thin-film materials manufactured safely and low cost. DLC shows semiconducting properties by doping other elements and we have been working on its application to solar cell. We introduce our approaches to the development of DLC and application of them to solar cell.

Materials

Mechanics

BOOTH 11 Nano-Processing of New Materials



Professor **YAN, Jiwang**
Department of Mechanical Engineering



We develop new technologies for nano-scale processing and surface property control of materials in order to create added value for industrial products. We deal with super hard alloys, ceramics, semiconductors, glass, diamond, CFRP, and so on. Recently, we succeeded in generation of nanoparticles and 3D nanostructures for high-capacity lithium-ion battery by laser irradiation on waste silicon sludge.

Materials

Mechanics

BOOTH 12 High-performance Optical Device Fabrication



Professor **YAN, Jiwang**
Department of Mechanical Engineering



We develop new fabrication technologies for nano-precision free-form optics and their molds by using ultraprecision machine tools. High-speed surface finishing of optical crystals, such as Si, Ge, ZnSe, CaF₂, etc. has been realized by ductile machining technology. Recently, we succeeded in fabricating ultra-thin Si-HDPE hybrid lenses for dark-field optics and thermography applications.

Materials

Electronics

BOOTH 13 Novel Development of 0D/2D Nanophosphor Materials

Professor **ISOBE, Tetsuhiko**
Research Associate **ISO, Yoshiki**
Department of Applied Chemistry



We introduce 0D/2D nanophosphor materials, i.e., cadmium-free compound semiconductor quantum dots that enable wide color-gamuts of micro-LED and liquid crystal displays etc., environmentally friendly carbon dots with low toxicity and high hydrophilicity, and nanosheets with a function of wavelength conversion from UV to red or near IR.



Biomedical

Electronics

BOOTH 5 Biological and energy application of nanofiber



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



1. Immediate, reusable and sensitive cell detection with quartz crystal microbalance.
2. Oil-water separation using nanofiber.
3. Flexible, laminated lithium-ion battery and Lithium-air battery.
4. Transparent conductive fiber film is presented.

Biomedical

Information and Communication

BOOTH 14 New Applications of Micro/Nano Technology - From Healthcare to Advanced Medical Devices - From ICT to Arts



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



Our laboratory's focus covers from salt-intake reduction, stress monitoring, artificial kidney, information communication technologies to brain wave music. Please visit our booth to experience them.

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Biomedical

Materials

BOOTH 15

Biomedical and information devices Integrated with micro/nano-scale functional materials



Associate Professor **ONOE, Hiroaki**
Department of Mechanical Engineering



By using microfabrication and microfluidic technologies, we are developing novel functional microdevices integrated with nanoscale materials such as hydrogels, colloidal crystals, CNT and graphene. Our functional devices could be applied to in vitro tissue reconstruction for regenerative medicine, biochemical sensors for healthcare and environment monitoring, hydrogel microactuators, and reflective displays.

Biomedical

Mechanics

BOOTH 16

Cell Culture Technology mediated by Ultrasonic Vibration



Associate Professor **TAKEMURA, Kenjiro**
Research Associate **KURASHINA, Yuta**
Department of Mechanical Engineering



Regenerative medicine requires a novel cell culture technology. Our research group aims to develop such cell culture technology using ultrasonic vibration. We will introduce an effective cell collection method using resonance vibration, and enzyme free cell detachment method etc.

Biomedical

BOOTH 17

The Innovative Arrhythmia Therapy : PD ABLATION®

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



We have proposed PD ABLATION® as an application of Photodynamic Therapy to an innovative arrhythmia treatment and developed a clinical device. The great interest has been focused in the heart rhythm societies in worldwide. We will show you the state-of-the-art technologies on PD ABLATION®.

Biomedical

BOOTH 18

Innovative laser probe technology for deep lesion

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



To treat deep tumor lesion, we have focused on development of an ultra-thin laser diffusion probe less than 1.5 mm in diameter. We specially designed the probe to treat distal lung tumor and brain stem tumor. New technologies equipped on the probe will be shown.

Biomedical

BOOTH 19

Cure arteriosclerotic blood vessel surely : Vascular hyperthermia

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



We have developed innovative angioplasty by means of laser-mediated-heat generation to treat arteriosclerotic blood vessel. A dilatation function as well as drug delivery characteristics was drastically improved. We have already experienced clinical cases. We will present the clinically available heating catheter.

Biomedical

Information and Communication

BOOTH 32

Visualization of Memories by EEG



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



We will have two exhibits. The first one uses EEG to visualize memory. I have studied to know in advance whether or not it is a CM that remains in memory. The second one is a VR image that changes with the brain wave, and I have made a device to check the release degree of the stress of those who saw it. By using this we can research the images that can release stress without fail, it became a device that leads to stress release just by looking at it.

Society & Environment

Society & Environment

Materials

BOOTH 4

Environmental friendly functional thin films



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



1. High-sensitive ammonia sensing in mixed gas using a QCM.
2. The coating with anti-icing property is presented.
3. The film which reflect near-Infrared light and has energy saving effect.
4. Functional thin film for the improvement of condensation heat transfer coefficient is presented.

Society & Environment

BOOTH 33

Data Analysis : Quantification for Customer Satisfaction and Service Quality, Analysis for POS, Medical and Sports Data

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



Nowadays, in various fields, the use of data analysis attracts attention. In the field of marketing, analysis of data for customer questionnaire survey and the Web environment are conducted. In the medical and sports fields, the use of data analysis is being practiced. We present several data analyses, such as case studies of quantifying customer satisfaction and quality, analysis for POS, medical and sports data.

Society & Environment

BOOTH 34

Logistic Big Data and Supply Chain Visualization



Professor **MATSUKAWA, Hiroaki**
Department of Administration Engineering



Logistic Big Data and supply chain visualization system enables automatic construction of supply network. The system supports supply chain risk management without significant financial investment, realize safety and on time logistics. Furthermore, the big data collected by the system can be used in the trans-industry analysis, so that to enables efficient and effective social investment.

Society & Environment

Mechanics

BOOTH 42

Reactive Fluid Dynamics



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



Reactive fluid dynamics is applied to understand phenomena in engines, fuel cell, reactor and so on. We analyze these complex phenomena experimentally and numerically. The results are applying actual devices. I am glad if you touch new results at the Techno-mall.

Society & Environment

BOOTH 43

Analysis of driver cognitive and behavioral characteristics, design and evaluation of human machine interface

Professor **DAIMON, Tatsuru**
Department of Administration Engineering



We study the effect of advanced driving safety assistance systems with in-vehicle/roadside information, warning and automated driving on driver cognitive and behavioral characteristics. Especially, we study the analysis and evaluation of human machine interface of such systems based on driver characteristics.

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Society & Environment

BOOTH 44 Meta-heuristic solution for vehicle routing problem

Professor **DAIMON, Tatsu**
Department of Administration Engineering



Vehicle routing problem (VRP) is a constraint optimization problem on the number of vehicles, link cost (time or distance), load capacity of each vehicle, various requests of customer on time of delivery or pickup (time window). We study fast and conditional algorithm of meta-heuristic solving VRP, with the goal of rationalizing vehicle routing for logistics.

Society & Environment

BOOTH 45 A measurement and removal technology for PM2.5 in the air



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



Recently, many studies point out that the fine particles in the atmosphere have more damage to human health. The automatic continuous measurement equipment for acidity and chemical ions in PM2.5 was developed to understand the behavior of PM2.5 in the atmosphere. The removal equipment was also developed by spraying with charged water mist.

Society & Environment

BOOTH 46 A removal and refining technology for NMP in the exhaust gas from the production process of Li ion battery



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



NMP is an expensive solvent, so that the recycle use of NMP is expected. The recovery and refining equipment for NMP in the exhaust gas from the production process of Li ion battery was developed.

Society & Environment Information and Communication

BOOTH 47 Realtime Evacuation Planning based on Simulation and Data from IoT Sensors, and Application of Virtual reality techniques to Improve Evacuation Skill

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



Our research goal is to realize navigation technique for evacuees by real-time planning and notification of an adequate evacuation plan. In order to make the adequate plan, it's necessary to combine various techniques, such as agent-based simulation, physical simulation of disasters, IoT sensor Technology, and virtual reality techniques for visualization.

Society & Environment Information and Communication

BOOTH 48 Facilitating Modeling and Enhancing Security of Social Systems

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



Our research goal is to make social systems work efficiently and safely. To automate and to enhance security level of business processes are important. this laboratory has been researched such technologies. For the former, there are mining, and conformance verification techniques. For the latter, there are security technologies for complex organization structure and IoT sensors.

Society & Environment

BOOTH 49 A bacterium that degrades and assimilates poly (ethylene terephthalate)



Professor **MIYAMOTO, Kenji**
Department of Biosciences and Informatics



We have isolated a novel bacterium that is able to use PET as its major energy and carbon source.

Mechanics

Mechanics Materials

BOOTH 35 3D metal printing with direct energy deposition

Research Associate **KOIKE, Ryo**
Associate Professor **KAKINUMA, Yasuhiro**
Department of System Design Engineering



Metal deposition attracts much attention from various industries because of its applicability to complex-shaped production with high efficiency. This study is now trying to establish a dissimilar-metal joint technique applying direct energy deposition, which deposits powder material with a high-power laser, and construct the time-domain thermal simulation.

Mechanics Electronics

BOOTH 50 Living and life Support Robot

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



I will give a demonstration of a mobile robot for the purpose of the living and life support. Various sensors such as range image sensors are attached on the robot and we can control remotely while judging sensor information. The robot can go to a destination by remote controlling and can avoiding obstacles automatically.

Mechanics Information and Communication

BOOTH 51 A realization of motion editable and reproducible society of robots by Real-Haptics technology

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



Transmission of force sensation between remote areas is realized by bilateral control with master-slave robots. We try to create a new society where motion or action can be edited and reproduced freely. This society is called IoA (Internet of Action) society which is considered as a new IoT society.

Mechanics Materials

BOOTH 52 Electro-adhesive sheet and the applications

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



A developed "electro-adhesive sheet (EA sheet)" can control the adhesion at the surface according to applied electric field. The EA sheet is applicable to the brake, clutch, fixture mechanism and so on. We will exhibit the practical application devices in our booth.

Mechanics Materials

BOOTH 53 Ultra-precision machining and intelligent machining system



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



We research on production process of optical elements, analyzing the sub-surface damage due to nanoscale cutting and grinding of optical materials. In addition, we are working on development of intelligent machine tools which have ability to control machining force and vibration according to cutting state. In our booth, we will exhibit samples of optical elements produced by ultra-precision machining and show the developed intelligent machine tools.

Mechanics

Biomedical

BOOTH
54

Instantaneous Power Machine



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



This technology attains fast and dynamic outputs by considering a mechanical structure of an actuator. It is possible to transmit the electric power to the mechanical power with high efficiency. Thus high speed, high torque, and high back drivability are attained. The dynamic actuator realizes performance improvement of a robot that is used in contact tasks.

Electronics

BOOTH
57

Micro Sensor Platform for Flexible Combination of Sensors



Professor **KURODA, Tadahiro**
Department of Electronics and Electrical Engineering



A key for IoT systems is to get and analyze various sensing data in real-time. Our Micro Sensor Platform is targeting a small sensor node of network with flexible sensor combination and smart analysis of sensing data.

Electronics

Materials

BOOTH
58

Diamond quantum sensor for highly-sensitive detection of magnetic field and current



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



We develop highly-sensitive quantum sensor using electric spins in diamond for detection of ultraweak magnetic field and current. Our quantum sensor can be applied to nano-device/battery sensing and bio-imaging.

Electronics

Electronics

Information and Communication

BOOTH
36

Development of a Technology Computer Aided Design (TCAD) tool for electronic devices

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



TCAD Research and Development Center of Keio University develops a process and device simulator based on physical and chemical modeling. Demonstration of TCAD tool as well as recent R&D achievements are presented.

Electronics

BOOTH
59

General Purpose Arm



Research Associate **NOZAKI, Takahiro**
Professor **MURAKAMI, Toshiyuki**
Professor **OHNISHI, Kouhei**
Department of System Design Engineering



We introduce a newly developed robotic manipulator "general purpose arm." This manipulator works as an avatar of an operator, as it can generate human-like strong, dexterous, and adaptive motions.

Electronics

Materials

BOOTH
37

Spintronics Research Center

Professor **ITOH, Kohei**
Department of Applied Physics and Physico-informatics
Professor **NOZAKI, Yukio**
Department of Physics
Associate Professor **ANDO, Kazuya**
Department of Applied Physics and Physico-informatics



Spintronics Research Center of Keio University specializes in quantum spintronics research in the framework of the Spintronics Research Network of Japan operated together with U. Tokyo, Tohoku U. and Osaka U. Recent advancements in quantum spintronics research are presented.

Electronics

BOOTH
63

Research on computer system technology for CFD using reconfigurable LSI



Professor **AMANO, Hideharu**
Department of Information and Computer Science



FPGA is a reconfigurable LSI. Because of its superior power consumption, it is attracting attention as an acceleration technique for numerical calculation instead of GPU. In this research, collaborating with the Japan Aerospace Exploration Agency (JAXA), we are working on research to improve the performance of satellite engine numerical analysis technology using FPGA.

Electronics

Mechanics

BOOTH
55

Control System for Welfare Devices -Human Motion Analysis and Control-

Professor **MURAKAMI, Toshiyuki**
Research Associate **NOZAKI, Takahiro**
Department of System Design Engineering



Optimal control design of support devices for human motion is considered. This makes it possible to improve the reliability of the support devices. Also it is expected to be extended to the operation skills of human. As one of application examples, avoidance control of falling down motion is shown.

Electronics

Information and Communication

BOOTH
64

Optical functional devices fabricated with CMOS compatible process



Associate Professor **TANABE, Takasumi**
Department of Electronics and Electrical Engineering



As the operating frequency of integrated circuit becomes higher, the increasing power consumption needed for data transmittance in the chip is becoming a problem. Photonics technologies that may enable to transmit data on silicon chip is receiving attention. We developed silicon photonic crystals that allow light to confine in silicon chip, by using CMOS compatible technologies.

Electronics

Biomedical

BOOTH
56

Small-size and Low-energy Sensor Systems Detecting Low-molecular Substances for Breath-based Health Monitoring

Professor **UCHIDA, Ken**
Professor **KURODA, Tadahiro**
Professor **ISHIKURO, Hiroki**
Department of Electronics and Electrical Engineering



Small-size and low-power sensor systems where nano-materials are utilized will be introduced. The sensors detect gaseous molecules as well as volatile organic compounds (VOC). Because of low-energy properties, it can be integrated in mobile devices such as smart phone and will be utilized to monitor health conditions of users.

Materials
Biomedical
Society & Environment
Mechanics
Electronics
Information and Communication
Other Fields
Chemicals Group
Initiative Zone
Creativity
Medical-Engineering Collaboration Zone

Materials
Biomedical
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Mechanics
Electronics
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Other Fields
Chemicals Group
Initiative Zone
Creativity
Medical-Engineering Collaboration Zone

Information and Communication

Information and Communication

Electronics

BOOTH
69

Thermal Display for Transmission of Thermal Sensation



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



"Thermo film" is a flexible device that can render thermal sensation based on thermal-electrical transformation. Since the device is thin and flexible, it is possible to change the structure. Thus the device will be applied to a wearable and cellular interfaces.

Information and Communication

Electronics

BOOTH
70

Responsive Multithreaded Processor for Distributed Real-Time Systems



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



We demonstrate some cutting-edge embedded technologies such as Responsive Multithreaded Processor (RMTP) for distributed real-time systems including humanoid robot and spacecraft control, RMTP SoC, RMTP SiP, and Responsive Link that is a real-time communication standard.

Information and Communication

Society & Environment

BOOTH
71

SuperSQL x VR ==3D Museum & Data Visualization==

Associate Professor **TOYAMA, Motomichi**
Department of Information and Computer Science



Toyama laboratory is developing SuperSQL, an extension of the SQL query language. SuperSQL allows users to generate VR content (Unity programs) directly from their database by only writing short queries. We showcase the system and let you experience it using a head mounted display.

Information and Communication

Society & Environment

BOOTH
72

SQL on Open Data ==Remote Table Access==

Associate Professor **TOYAMA, Motomichi**
Department of Information and Computer Science



We showcase Remote Table Access (RTA), a framework for the easy publication and integration of open relational data. Through a central web application, data owners are able to publish their tables for data users to browse, and access and integrate with their local data through SQL-like queries.

Information and Communication

BOOTH
73

IoT platform realizing trustworthy resource sharing among devices



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



The IoT (Internet of Things) is the network of "things" with capability to communicate with each other. Each IoT device will have limited computing resources, and sometimes its resources will not be used. We propose the IoT platform that provides high-level services by trustworthily sharing computing resources among IoT devices.

Information and Communication

BOOTH
74

Flexible network service accommodation by cooperation of Reconfigurable Communication Processors (RCP)



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



Multiple service accommodation can be realized by using Reconfigurable Communication Processor (RCP) composed of hardware resources such as FPGA, LSI, and CPU. The hardware on RCPs can be treated as "resource pool" thanks to high-speed optical interconnection. According to the user's request, the hardware is flexibly allocated from the resource pool to each service.

Information and Communication

BOOTH
75

HOLST: High-speed optical layer 1 switch system for time slot switching based energy efficient data center network (DCN)



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



Installation of optical circuit on a data center network (DCN) has been studied to reduce its power consumption. In the conventional MEMS optical switch-based system, only flows that require large bandwidth and have long duration time can be accommodated due to low-speed switching time. We propose a DCN that adopts ultra high speed PLZT optical switches to increase the number of flows bypassed to the optical circuit.

Information and Communication

BOOTH
76

Interactive Robots

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



Imai Laboratory's study is on interactive intelligence system to achieve smooth interacting within humans and robots. We aim to achieve adaptive action generation system with design based on cognitive properties of man. Today, we will demonstrate interactive robots and explain to you about the technical aims of the robots.

Information and Communication

BOOTH
77

Application Function Chaining: Fusion of Communication and Computation

Professor **TERAOKA, Fumio**
Assistant Professor **KANEKO, Kunitake**
Department of Information and Computer Science



Application Function Chaining (AFC) enables application developers to put AFs at desired locations in various types of communication paths. AFC integrates computation into communication by providing data processing on communication paths.

Information and Communication

Society & Environment

BOOTH
78

Digital data networking

Assistant Professor **KANEKO, Kunitake**
Department of Information and Computer Science



In order to utilize digital data which grows enormously, we design a global digital data network on top of the existing computer networks. In this booth, we introduce an autonomous distributed content relationship sharing system for the next-generation content service and the distributed content ownership management infrastructure using block chains with demonstrations.

Information and Communication

Electronics

BOOTH
79

IT Infrastructure Technologies to Expand Network Services



Assistant Professor **KANEKO, Kunitake**
Professor **TERAOKA, Fumio**
Department of Information and Computer Science



Developing new network services is always a fight against technology restrictions. We develop the technologies that overcome known limitations and support to realize new network services. This booth introduces and demonstrates highly precise clock synchronization and a trustworthy big-data sharing method.

Information and Communication

BOOTH 80 Fast 6DoF Object Pose Estimation from Point Cloud Data

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



Fast 6DoF (Position and Pose) estimation method will be demonstrated. Our approach can contribute to automation of manufacturing/logistics tasks.

Information and Communication

BOOTH 81 Named Data Networking: Security Improvement and Application to Vehicular Ad-Hoc Networks

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



Named Data Networking (NDN) is one of next generation networks, where users can obtain contents using content names instead of IP addresses. We propose a method to improve security in NDN and a new vehicular ad-hoc network applying NDN.

Information and Communication

Materials

BOOTH 82 Photonics polymers realizing super-high-speed and super-high-definition devices



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



Japan will start the 4K/8K broadcasting ahead of the world. We introduce the world's fastest plastic optical fiber that enables a real-time transmission of the staggering amount of information. Our photonics polymers also bring innovation to the liquid crystal display structure which becomes larger and more complicated.

Information and Communication

BOOTH 83 Sports video analysis using Deep Learning

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



We are engaged in research on sports video analysis using image sensing technology making use of deep learning and so on. In this exhibition, we introduce examples of sports video analysis for swimming, rugby and tennis competitions with demonstrations.

Information and Communication

BOOTH 84 Image sensing applications of Deep Learning technology

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



Deep Learning is now an indispensable technology in image sensing research. This exhibition introduces the latest Deep Learning research used for object recognition and scene understanding.

Information and Communication

BOOTH 85 Polymer Optical Waveguide Devices for Exa-FLOPS Scale Computing



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



Optical interconnect technologies have been drawing much attention for realizing exa-scale high-performance computing systems. In this research, polymer optical waveguide devices for high-bandwidth-density interconnects are designed and fabricated in order to demonstrate their outstanding performances.

Information and Communication

BOOTH 86 Human Sensing for Super Mature Society: Towards Sports and Rehabilitation



Professor **SAITO, Hideo**
 Department of Information and Computer Science



We will introduce several sensing technologies to recognize human behavior. Based on the techniques, the human embodiment can be reconstructed in the virtual environment. We apply these techniques to the purpose of sports training and rehabilitation.

Information and Communication

BOOTH 87 3D Gaze Visualization for Collective Visual Sensing

Associate Professor **SUGIMOTO, Maki**
 Research Associate **SUGIURA, Yuta**
 Department of Information and Computer Science



Gaze behavior is one of expressions of human's attention and intention, and it is possible to analyze attention of a group by measuring multiple users. In this exhibition, we introduce a visualization system based on our gaze measurement technique in three dimensional space using wearable devices.

Information and Communication

Electronics

BOOTH 88 Ubiquitous Optical Sensing

Associate Professor **SUGIMOTO, Maki**
 Research Associate **SUGIURA, Yuta**
 Department of Information and Computer Science



By utilizing embedded optical sensors and machine learning techniques, it is possible to configure flexible measurement systems according to the measurement target in the real environment. In this exhibition, we introduce touch sensing using soft objects and facial expression / hand gesture recognition systems by wearable devices.

Information and Communication

Society & Environment

BOOTH 89 Blockchain-based Product Ownership Management System (POMS) for Anti-counterfeits

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



A novel POMS (Product Ownership Management System) of products for anti-counterfeits is introduced. With the proposed POMS, a customer can reject the purchase of counterfeits, if the seller does not possess the ownership of genuine products.

Information and Communication

Biomedical

BOOTH 90 Wireless Health Monitoring



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



We introduce wireless health monitoring techniques that can realize non-contact measurement of vital signals, such as heart beat, breathing, and blinking.

Information and Communication

Electronics

BOOTH 91 Research and Development on Photonic Networks Using Broad Wavelength Range of T-band and O-band



Professor **TSUDA, Hiroyuki**
 Associate Professor **KUBO, Ryogo**
 Department of Electronics and Electrical Engineering



Arrayed-waveguide grating routers for newly developing waveband (T-band, 1000-1260 nm) are fabricated. It realizes low-cost, ultra large capacity transmission systems for data center networks.

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Materials

Biomedical

Society & Environment

Mechanics

Electronics

Information and Communication

Other Fields

Chemicals Group Exhibit Zone

Creativity Initiative Zone

Medical-Engineering Collaboration Zone

Information and Communication Society & Environment

BOOTH 92 SAM: Smart Ambient Media ---Concepts, Methodologies, and Applications---Professor **FUJISHIRO, Issei**
Department of Information and Computer Science

SAM (Smart Ambient Media) is an environment media which builds upon a feature processing loop comprising human sensing, smart computing, and adaptive display to enrich our daily lives. In this booth, we will provide a comprehensible introduction to the concepts and methodologies of SAM through demonstrating three latest applications.

Information and Communication Other Fields

BOOTH 93 Comic generation support systemProfessor **HAGIWARA, Masafumi**
Department of Information and Computer Science

Comic is a visual and user-friendly medium. We demonstrate and explain a comic generation support system for news.

Other Fields

Other Fields

BOOTH 20 UX design: product planning to meet and exceed users' expectationsAssociate Professor **NAKANISHI, Miwa**
Department of Administration Engineering

UX (User Experience) is an overall experience from when a user encounters a product to when he/she separates from it, essentially what the user can only know. If so, how can UX be built into the product? We will introduce a practical approach to apply to product planning in the design process to approach true UX design.

Chemicals Group Exhibit Zone

From medicines and cosmetics to batteries and performance materials, our prosperous lives are supported by the power of chemicals. The chemicals group exhibit will highlight the diverse research being conducted by ten researchers from three fields of study, who are active in diverse stages ranging from technology development to commercialization. The diverse research includes the study of inorganic and organic compounds, polymers, and proteins. The group exhibit of this year's KEIO TECHNO-MALL offers even more, including a guest appearance by President Kazutoshi Kobayashi of KOSÉ Corporation who will give a short presentation, making it a must-see.

**<Short Presentation>**

Time/12:45-13:30 Venue/Short Presentations ①

*Refer to the Floor Map on page 02 and 03 to find the venue.

Materials

BOOTH 21 Reaction analysis of electrochemical devices using quartz crystal electrodesResearch Associate **SERIZAWA, Nobuyuki**
Department of Applied Chemistry

The detailed analysis of electrode reactions is necessary for development of electrochemical devices. The small change in electrode mass and distribution of the electrolyte can be detected by the electrochemical measurements using quartz crystal electrodes. This study aims the measurements under the conditions which simulate practical electrochemical devices.

Materials

Biomedical

BOOTH 22 Dynamics of the interface in far-from-equilibrium conditions and their applications to the technologies in the field of cosmetic scienceProfessor **ASAKURA, Kouichi**
Department of Applied Chemistry

Is it possible to realize the system in which an interface spontaneously starts dancing like living organisms? The answer is "Yes!". In the process of forming interfaces in far-from-equilibrium conditions by the processes of coating, drying, and mixing, they can exhibit various dynamisms spontaneously. These phenomena are strongly correlated with technologies in the field of cosmetic science.

Materials

BOOTH 23 Polymer Coating on Substrates under Low Temperature and Ambient PressureAssociate Professor **OAKI, Yuya**
Department of Applied Chemistry

Conductive polymers with rigid main chain, such as thiophene and pyrrole derivatives, are coated on any substrates under low temperature and ambient pressure. The present methods can be applied to a variety of functional coating.

Biomedical

Society & Environment

BOOTH 24 New development of high-volume cyclone sampler for evaluating adverse health effect caused by PM2.5Associate Professor **OKUDA, Tomoaki**
Department of Applied Chemistry

Recently, atmospheric aerosols such as PM2.5 are of serious concern for human health. Physical and chemical properties of aerosols are important as they provide metrics for their adverse health effects. Here I would like to introduce recent concept to elucidate these parameters using aerosol engineering techniques such as virtual impactor and cyclone system.

Biomedical

Society & Environment

BOOTH 25 Measurements of electrostatic charging state and surface area of ambient aerosol particles for evaluating adverse health effect caused by PM2.5Associate Professor **OKUDA, Tomoaki**
Department of Applied Chemistry

Recently, atmospheric aerosols such as PM2.5 are of serious concern for human health. Physical and chemical properties of aerosols are important as they provide metrics for their adverse health effects. Here I would like to introduce recent concept to elucidate these parameters by measuring electrostatic charging state and surface area of ambient aerosol particles.

Biomedical

Society & Environment

BOOTH 26 Synthesizing molecule at will - the power of organic synthesisResearch Associate **OGURA, Akihiro**
Department of Applied Chemistry

Our group is chemically synthesizing complex natural products from easily available reagent. We are also developing light-mediated chemical reaction using LED.

Biomedical

BOOTH 27 Discovery of drug lead compounds from marine organismsProfessor **SUENAGA, Kiyotake**
Research Associate **IWASAKI, Arihiro**
Department of Chemistry

Some compounds produced by organisms exhibit useful biological activities, and their structures have been regarded as good motifs for the drug development. In order to discover novel drug lead compounds, we have investigated the secondary metabolites of marine organisms such as marine cyanobacteria.

Materials

Biomedical

BOOTH
38Application of newly designed
anionic spherical protein
supramoleculeAssistant Professor **KAWAKAMI, Norifumi**
Department of Biosciences and Informatics

We have recently designed and produced the protein supramolecule nano-cage having 20 nm diameters with the highly anionic charged molecular surface. Owing to its shape and properties, the designed protein supramolecule behaves as nanoparticle responding to the electric field. We are now exploring the potential applications of this protein supramolecule.

Materials

Biomedical

BOOTH
39Droplet-Type Microrobots
Exhibiting Chemotactic MotionResearch Associate **BANNO, Taisuke**
Department of Applied Chemistry

In far-from-equilibrium conditions, micrometer-sized droplets in emulsion system composed of water, oil, and surfactant exhibit self-propelled motion. Because their propelling mode can be controlled by the compositions and chemical reactions, they have potential applications as microrobots that are carriers and probes for exploring environmental or biological systems in very small space.

Materials

BOOTH
40Design and synthesis of hybrid particles
by using nano-sized water droplets
as templatesAssistant Professor **FUKUI, Yuuka**
Professor **FUJIMOTO, Keiji**
Department of Applied Chemistry

Nanoparticles have received much attention because of their intriguing properties. We employed nano-sized water droplets provided by phospholipid vesicles (liposomes) or water-in-oil miniemulsion for synthesis of hybrid nanoparticles and tuning of their structures and functional properties. A variety of nanoparticles could be obtained including bio-derived nanocapsules and organic-inorganic hybrid particles.

Biomedical

Society & Environment

BOOTH
41Chemical Sensors and Biosensors for
Healthcare and Environmental ApplicationsProfessor **CITTERIO, Daniel**
Assistant Professor **HIRUTA, Yuki**
Department of Applied Chemistry

Our laboratory works on the development of sensitive chemical sensors and biosensors for environmental and healthcare applications. Research topics include the development of functional fluorescent dyes, luminescent probes and functional nanomaterials for sensing applications. In addition, we make use of paper substrates to realize low-cost and simple chemical sensing devices.

Creativity Initiative Zone

Creativity Initiative Research
- Global Smart Society Creation Project -

Keio University has been selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) for the 2014 Top Global University Project as one of Japan's top universities providing a world-class level of research and education (Type A). Under this project, Keio will contribute to the world by taking advantage of its own strength at 3 cluster areas; "Longevity", "Security" and "Creativity". We here present Global Smart Society Creation Project under Creativity Initiative.

Society & Environment

BOOTH
60Sustainable design of
architecture and cityProfessor **IKAGA, Toshiharu**
Department of System Design Engineering

Based on the sustainable design, we are conducting research to clarify and evaluate building and urban environment to realize maintaining health, intellectual productivity improvement, low carbon, business life continuity by survey on actual situations, subject experiments, statistical information, etc.

Society & Environment

Information and Communication

BOOTH
61Systems and Control Theoretic
Approach to Super Smart CityProfessor **NAMERIKAWA, Toru**
Department of System Design Engineering

The control theoretic and systems and control engineering approaches for the urban infrastructures and energy management systems building toward "super-smart city" will be presented.

Electronics

Information and Communication

BOOTH
62Cyber-Physical ICT:
Integrated Communication and
Control TechnologiesAssociate Professor **KUBO, Ryogo**
Department of Electronics and Electrical Engineering

In the next-generation IoT (Internet of Things) and M2M (machine-to-machine) networks, low-latency communication and high-precision control technologies are required. We present the concept of smart sensor-actuator networks supporting the IoT/M2M infrastructure from the viewpoint of communications and control engineering.

Other Fields

BOOTH
65

Building space with robot

Professor **MITA, Akira**
Department of System Design Engineering

The building space with a robot does many services, but it is not too convenient, sometimes it intentionally proposes an exercise or a cooking to support a healthy lifestyle. This space watches over the increasing number of elderly persons living alone.

Other Fields

BOOTH 66 Wave System



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



We succeeded in realization of wave control of a mechanical system by a modeling methodology based on distributed parameter system. Using a delay element, it is possible to construct a stable system without complicated controllers.

Information and Communication

BOOTH 67 Trustworthy self-driving car platform



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



We aim to realize a trustworthy network platform for controlling self-driving cars. Each of cars belongs to three base stations, and computing resource for self-driving migrates among network edges without connection interruptions according to the rapid car movement.

Information and Communication

BOOTH 68 Smart Community Implementation



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



Actual local implementation of smart community is introduced by illustrating the Smart Town project cooperated with a local government. In this project, special common data platform integrate and manage various smart community data by providing fine-grain authentication method. By using the platform, secure and flexible local community services can be provided.

Medical-Engineering Collaboration Zone

BOOTH 29 Flexible robotic forceps with haptic feedback for endoscopic surgery

Assistant Professor **WADA, Norihito**
Department of Surgery, Keio University School of Medicine



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

Haptic feedback in robotic surgery provides the patients with preciseness and safety of surgical procedures. We will introduce the results of experiments using flexible robotic forceps with haptic feedback for endoscopic surgery.

Medical-Engineering Collaboration Zone

BOOTH 30 Development of Innovative Rehabilitation Devices and the Smart Rehabilitation Initiative

Professor **LIU, Meigen**
Department of Rehabilitation Medicine,
Keio University School of Medicine



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

The Keio University Medical Engineering Collaboration team developed new rehabilitation treatments centered on the Brain Machine Interface against severe paralysis that was difficult to treat, verified its effect, and worked on practical application as medical devices. In the near future, we aim to innovate the rehabilitation by integrating the rehabilitation equipment group under development as "smart rehab room".

Medical-Engineering Collaboration Zone

BOOTH 31 Project for Objective Measures Using Computational Psychiatry Technology (PROMPT)

Assistant Professor **KISHIMOTO, Taishiro**
Department of Neuropsychiatry,
Keio University School of Medicine



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

Due to the lack of biomarkers that closely reflect illness severity in psychiatry, the field suffers enormously greatly in diagnosing, assessing treatment response, and developing new drugs. The goal of the project is to quantify the severity of psychiatric symptoms through facial expression, voice and body movement etc. utilizing information communication technology and machine learning.

Medical-Engineering Collaboration Zone

Keio University has a history of conducting collaborative research between the School of Medicine and the Faculty of Science and Technology. This research has lately expanded beyond the medical field to encompass robotics, cognitive science, and even big data. The exhibit will highlight leading technologies being developed by this medical-engineering collaboration at Keio University.



<Short Presentation>

Time/14:45-15:45 Venue/Short Presentations ①

*Refer to the Floor Map on page 02 and 03 to find the venue.

Medical-Engineering Collaboration Zone

BOOTH 28 Suppression of myopia progression by violet light

Professor **TSUBOTA, Kazuo**
Department of Ophthalmology, Keio University School of Medicine



Myopia has been increasing globally. Nearly 50% of the world population will be myopic by 2050. Myopia could lead to other diseases including blindness. Violet light exists abundantly outdoors, while it does not indoors. We have shown it could suppress myopia progression. We will introduce violet light glasses and other application examples.

Special Exhibits

- A** Central Service Facilities for Research
- B** Yokohama Industrial Development Corporation (IDEC)
- C** Kawasaki Institute of Industry Promotion (IIP)

Panel Presentations

Information and Communication

PANEL 94 Augmented Visualization based on 3D Sensing

KIF
Keio Institute of Information Technology
KIF Research Project

Professor **SAITO, Hideo**
Department of Information and Computer Science



The technologies of capturing 3D structures have recently been applied to various fields by drastic progress of various 3D sensors and 3D reconstruction methods from multiple viewpoint images such as structure from motion. In this panel presentation, we will introduce our recent research topics for augmented visualization of desired information using such 3D sensing technologies.

Information and Communication

Society & Environment

PANEL 95 Safe web interface and high-efficient data delivery in IoT

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



In IoT, generality, the power-saving and security & privacy are desired. We consider Power-saving in IoT, a multi-purposed data delivery system and the web interface which satisfies high security and privacy.

Information and Communication

Society & Environment

PANEL 96 PRINTEPS: An Integrated Intelligent Application Development Platform

KIF
Keio Institute of Information Technology
KIF Research Project

Professor **YAMAGUCHI, Takahira**
Assistant Professor **MORITA, Takeshi**
Department of Administration Engineering



System development using general-purpose robots takes a lot of time. If the intelligent software is incorporated, cost (human, monetary, time) will be even higher. Therefore, in order to facilitate the development of the intelligent system using a robot, we perform research and development for building tools and intellectual software.

Information and Communication

PANEL 97 Accelerating Big Data Processing Framework Satisfying Speed and All Data Properties

Associate Professor **MATSUTANI, Hiroki**
Department of Information and Computer Science



We are working on big data processing framework that combines batch processing and stream processing in order to satisfy both the speed and all data properties required when utilizing big data. We are accelerating such big data processing framework using accelerator devices, such as FPGAs and GPUs.

Mechanics

Other Fields

PANEL 98 Smart Agriculture using Multi-function Robot

Associate Professor **TAKAHASHI, Masaki**
Department of System Design Engineering



This project develops a multi-function robot system for smart agriculture. This system consists of base module, functional module and interface to satisfy system requirements against physical size, just in time production and low cost.

Mechanics

PANEL 99 Non-Destructive Evaluation by Ultrasonics

Professor **SUGIURA, Toshihiko**
Department of Mechanical Engineering



Non-destructive evaluation, detecting cracks or material degradation in structures, or identifying detachment in composite materials, has now been important for maintenance of industrial technology. Our laboratory is studying ultrasonic testing, including guided waves for inspecting long structures, and low-frequency ultrasonic waves for identifying crack tip positions.

Materials

Mechanics

PANEL 100 Assessment of the anisotropic carrier transport in semiconductor solar cells

Assistant Professor **OKANO, Makoto**
Associate Professor **WATANABE, Shinichi**
Department of Physics



Our research aim is the development of new optical technique to investigate an anisotropic carrier transport property of semiconductor solar cells by using terahertz polarization spectroscopy. In addition, we suggest the optimal solar cell structure for improving the light energy conversion efficiency.

Materials

PANEL 101 Development of Failure Prediction Methods for Automotive Adhesive Joints by CAE

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



Multimaterial design is an attractive way to reduce automotive body weight. Instead of spot welding, rivets, or bolts, adhesive joints are well known as a strong candidate to fasten automotive body parts. In this research, we introduce the prediction methods for adhesive joints failure by CAE.

Biomedical

PANEL 102 The development of microthermofluidic devices for life science research



Associate Professor **TAGUCHI, Yoshihiro**
Associate Professor **SUDO, Ryo**
Department of System Design Engineering



This project develops microthermofluidic devices for life science research by the integration of microfluidic devices, which have been developed from the standpoint of bioengineering and bioMEMS, and micro-optical detection systems, which have been developed from the standpoint of thermal engineering and optical MEMS.

Electronics

Materials

PANEL 103 Performance Prediction of Gas Sensors Based on Density Functional Theory and Charge Transport Calculations

Research Associate **TANAKA, Takahisa**
Professor **UCHIDA, Ken**
Department of Electronics and Electrical Engineering



Performance prediction of nanomaterial based gas sensors which can be integrated with mobile terminals is introduced. Density functional calculations followed by charge transport calculations enables us to predict performance of gas sensors a priori.

B2F (Hall E2)			7 F
Event Stage	Short Presentations ①	Short Presentations ②	Seminar Hall (Glass Building G701)
9:30	9:55 Opening Address		
10:00	10:15-10:30 Opening Ceremony	10:15-10:30 Live broadcast of the Opening Ceremony	
10:30			10:30-12:30 Seminar I National Logistic Data Center and Connected Industry MATSUKAWA, Hiroaki etc. Dept. of Administration Engineering
11:00	11:00-12:30 Round-table Session I The Role of Keio Faculty of Science and Technology: Industrial Expectations	11:00-12:30 Live broadcast of the Round-table Session I	
11:30		11:15-11:45 WATANABE, Shinichi Dept. of Physics Observation of internal strain in a black rubber material with terahertz light	
12:00		12:00-12:30 MIKI, Norihisa Dept. of Mechanical Engineering Medical & Healthcare applications enabled by micro/nano technologies	
12:30		12:45-13:15 SHIRATORI, Seimei Dept. of Applied Physics and Physico-informatics Coating Technology to prevent the "3D jobs" problems (Dirtiness, Dangerous and Demeaning works)	
13:00		12:45-13:30 Short Presentation Chemicals Group Exhibit Zone	
13:30	13:30-14:30 Main Event <Special Keynote Speech> View of Japan, the World and Beyond from Space	13:30-14:30 Live broadcast of the Main Event	13:00-16:00 Seminar II Human Sensing for Super Mature Society: Towards Sports and Rehabilitation SAITO, Hideo etc. Dept. of Information and Computer Science
14:00		14:30-15:00 OTSUKI, Tomoaki Dept. of Information and Computer Science Wireless Health Monitoring	
14:30		14:45-15:45 Short Presentation Medical-Engineering Collaboration Zone	
15:00	15:00-16:30 Round-table Session II Bringing the Keio FST concept to life through basic research -KiPAS in its first four years	15:15-15:45 NOZAKI, Takahiro Dept. of System Design Engineering Double Arm Robot Using State-of-the-art Electrical Equipment Technology	
15:30		16:00-16:30 TANABE, Takasumi Dept. of Electronics and Electrical Engineering Photonic devices fabricated with CMOS process: Towards the realization of electro-optic integrated circuits	
16:00		16:15-16:45 MIYAMOTO, Kenji Dept. of Biosciences and Informatics Discovery and application of PET-decomposing enzyme	16:30-17:30 Seminar III A New Measurement Technology for PM2.5 in the Atmosphere TANAKA, Shigeru etc. Dept. of Applied Chemistry
16:30			
17:00			
17:30			