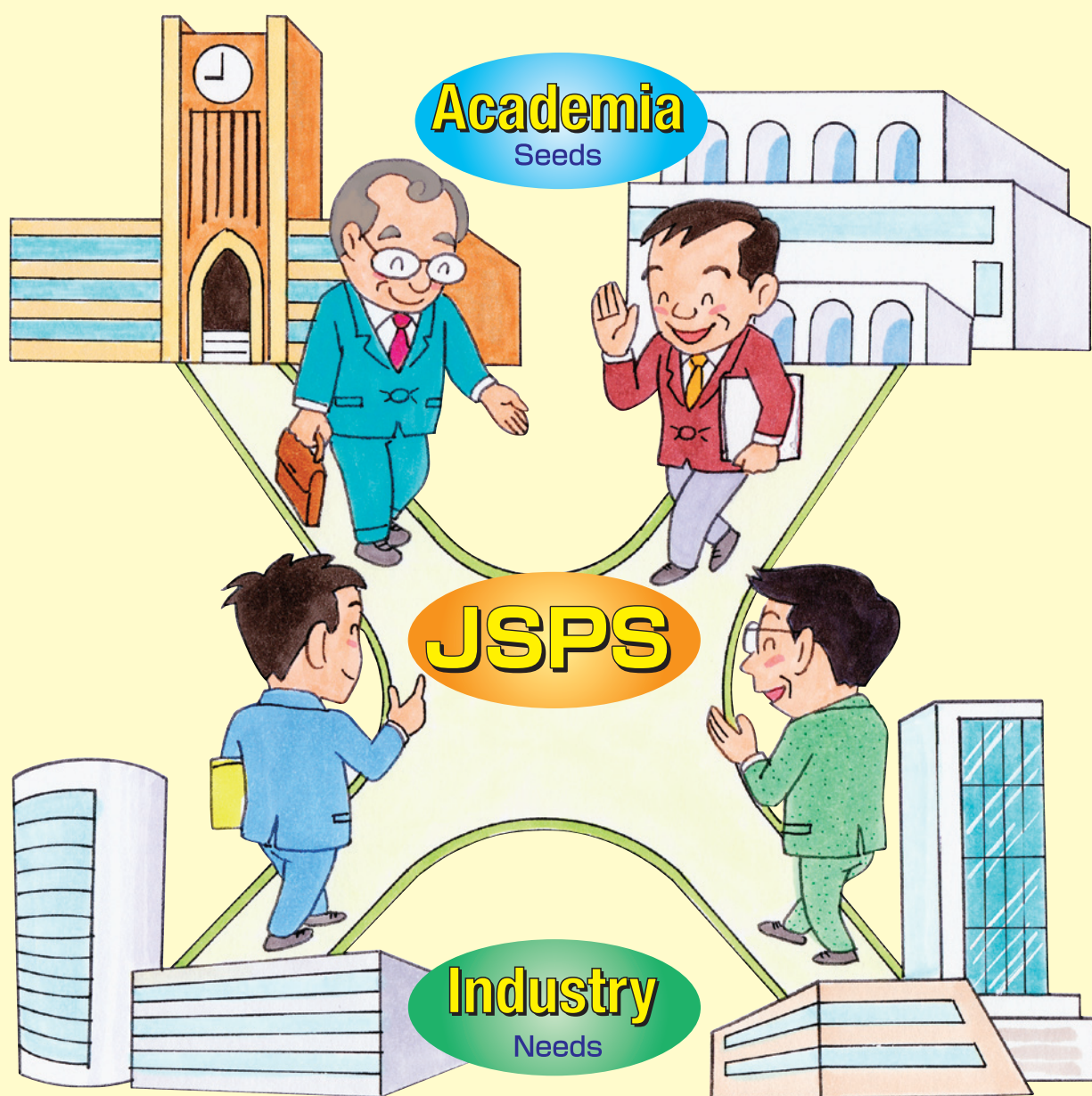


2014-15

University-Industry Research Cooperation

Societally Applied Scientific Linkage and Collaboration



2014-15

Japan Society for the Promotion of Science



Bridging academic seeds with industrial needs

Societally Applied Scientific Collaboration and Linkage

As Japan's core agency for advancing science and technology, the Japan Society for the Promotion of Science carries out a program set forth in the government's S&T Basic Plan, which along with funding scientific research, fostering researchers and furthering international scientific exchange, also mandates providing a system of support for university-industry cooperation.

In pursuit of this mandate, JSPS establishes University-Industry Cooperative Research Committees whose memberships comprise frontline researchers from both the academic and industrial sectors. Guided by the free concepts of the participating researchers, these committees work to advance inter-sectoral collaboration in promising fields of future technological innovation.

Advisory Council

Originally established in 1982, an Advisory Council (chair: Yasuharu Suematsu; sub-chair: Shin-ichi Hirano), considers new and budding fields of research that can be advanced to the benefit of society through university-industry collaboration. To comprehensively study and research such fields once identified, the Advisory Council establishes the following bi-sectoral committees:

- Committees for Research Promotion in Specialized Areas (3-year duration; funded by JSPS) and Frontier Research and Development Committees (3-year duration; partially funded by dues from University-Industry Cooperative Research Committees)
- University-Industry Cooperative Research Committees, which are 5 years in duration and funded through dues paid by their industrial members.

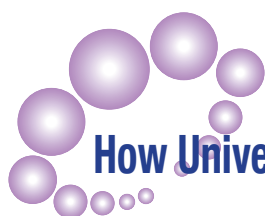
Committee List

	Committee Name	Chair	Duration
Committees for Research Promotion in Specialized Areas	Design and Demonstration of New Materials with New Functions for Industrial Applications	Kazumasa Miyake Full Time Fellow, Toyota Physical and Chemical Research Institute	Oct 2011 ~ Sep 2014
	Advancing Innovative Research on Chemical Biology in Japan	Hiroyuki Osada Director, RIKEN	Apr 2012 ~ Mar 2015
	Security Initiative for Open Global Information Systems	Hideyuki Tokuda Professor, Keio University	Apr 2012 ~ Mar 2015
Frontier Research and Development Committees	Flexible ICT Platform for Various Services for 10 Years Ahead and Industry-Government-University Collaboration Scheme	Takashi Kamitake Chief Fellow Corporate Research & Development Center	Oct 2012 ~ Sep 2015
	Construction of Resilient Social and Life Space	Hiroshi Yasuda Dean/Professor, Tokyo Denki University	Oct 2012 ~ Sep 2015
	Radiation Effects and Crisis Communication	Shunichi Yamashita Nagasaki University, Vice-President	Oct 2014 ~ Sep 2017
	Future Prospect of Nuclear Technology as Contributing to Human Welfare	Akimi Serizawa Kyoto University, Professor Emeritus	Oct 2014 ~ Sep 2017

List of University-Industry Cooperative Research Committees

(As of Apr, 2014)

Committee No.	Subject	Chair	Title	Institution	Established
19th Committee	Steelmaking	Kimihisa Ito	Professor	Waseda University	Oct 1934
24th Committee	Foundry Technology	Shoji Kiguchi	Professor	Kinki University	Nov 1936
36th Committee	Industrial Instrumentation	Koichiro Deguchi	Professor Emeritus	Tohoku University	Jun 1947
54th Committee	Ironmaking	Eiki Kasai	Professor	Tohoku University	Apr 1943
69th Committee	Materials Processing and Applications	Masazumi Okido	Professor	Nagoya University	Apr 1944
76th Committee	Construction Materials	Kimitaka Uji	Professor	Tokyo Metropolitan University	Oct 1944
108th Committee	Business Administration	Akira Komatsu	Professor	Musashino University	Apr 1947
111th Committee	Development on the Utilization of Minerals	Shin-Ichiro Wada	Professor	Kyushu University	Jul 1947
116th Committee	Chemistry Creating Organic Compounds with Novel Functions	Tamejiro Hiyama	RDI Professor	Chuo University	Mar 1948
117th Committee	Carbon Materials	Masayuki Kasaguchi	Professor	Osaka Electro-Communication University	Mar 1948
118th Committee	Industrial Structure: Small and Medium Business	Hiroyuki Okamura	Professor	Hitotsubashi University	Mar 1948
120th Committee	Functionalization of Textiles and Polymers	Kunihiro Hamada	Vice President/Dean/Professor	Shinshu University	Sep 1948
123rd Committee	Heat Resisting Metals and Alloys	Masao Takeyama	Professor	Tokyo Institute of Technology	Apr 1957
124th Committee	Advanced Ceramics	Takashi Goto	Professor	Tohoku University	Feb 1958
125th Committee	Conversion between Light and Electricity	Yoichiro Nakanishi	Visiting Professor	Shizuoka University	Feb 1958
129th Committee	Strength and Fracture of Advanced Materials	A.Toshimitsu Yokobori.Jr	Professor	Tohoku University	Jun 1960
130th Committee	Optoelectronics	Takashi Kurokawa	Professor Emeritus	Tokyo University of Agriculture and Technology	Mar 1961
131st Committee	Thin Films	Shigeaki Zaima	Professor	Nagoya University	Mar 1961
132nd Committee	Electron and Ion Beam Science and Technology	Shinji Matsui	Professor	University of Hyogo	Feb 1962
133rd Committee	Microstructures and Functions of Materials	Shin Takeuchi	Consultant	Museum of Science,Tokyo University of Science	Jun 1962
134th Committee	Colour Fastness Tests	Teruo Hori	Visiting Professor	University of Fukui	Apr 1963
136th Committee	Future-Oriented Machining	Toshiro Doi	Professor Special Duty	Kyushu University	Nov 1964
139th Committee	Properties of Steam	Masaru Nakahara	Professor Emeritus	Kyoto University	Nov 1969
141st Committee	Microbeam Analysis	Yahachi Saito	Professor	Nagoya University	Sep 1974
142nd Committee	Organic Materials Used in Information Science and Industry	Naoyuki Koide	Professor Emeritus	Tokyo University of Science	Nov 1974
143rd Committee	Process Systems Engineering	Masahiko Hirao	Professor	The University of Tokyo	Jun 1976
145th Committee	Processing and Characterization of Crystals	Michio Tajima	Professor Emeritus/Professor	Japan Aerospace Exploration Agency/Meiji University	Oct 1977
146th Committee	Superconductive Electronics	Keiji Enpuku	Professor	Kyushu University	Oct 1982
147th Committee	Amorphous and Nano-Crystalline Materials	Mitsuteru Inoue	Executive Trustee and Vice President, Professor	Toyohashi University of Technology	Oct 1983
148th Committee	Coal and Carbonaceous Resources Utilization Technology	Takayuki Takarada	Professor	Gunma University	Apr 1984
150th Committee	Acoustic Wave Device Technology	Noboru Wakatsuki	Professor	Ishinomaki Senshu University	Apr 1985
151st Committee	Advanced Nanodevice and Nanomaterial Technology	Koji Ishibashi	Director and Chief Scientist	RIKEN	Apr 1986
153rd Committee	Plasma Materials Science	Hiroshi Fujiyama	Professor	Nagasaki University	Apr 1988
154th Committee	Semiconductor Interfaces and Their Applications	Seiichi Miyazaki	Professor	Nagoya University	Apr 1990
155th Committee	Fluorine Chemistry	Takeo Taguchi	Auditor	Sagami Chemical Research Institute	Apr 1990
157th Committee	Structural Response Control	Akira Nishitani	Professor	Waseda University	Jan 1994
158th Committee	Vacuum Nanoelectronics	Hidenori Mimura	Director and Professor	Shizuoka University	Apr 1994
160th Committee	Plant Biotechnology for the Environment, Food and Resources	Fumihiko Sato	Professor	Kyoto University	Jan 1996
161st Committee	Science and Technology of Crystal Growth	Hiroshi Fujioka	Professor	The University of Tokyo	Apr 1996
162nd Committee	Wide Bandgap Semiconductor Photonic and Electronic Devices	Akihiko Yoshikawa	Director/Professor	Chiba University	Apr 1996
163rd Committee	Internet Technology	Shinji Shimojo	Professor	Osaka University	Jul 1996
164th Committee	Genome Technology	Sumio Sugano	Professor	The University of Tokyo	Jul 1996
165th Committee	Ultra Integrated Silicon Systems	Toshiro Hiramoto	Professor	The University of Tokyo	Nov 1996
166th Committee	Photonic and Electronic Oxide Materials	Toshio Kamiya	Professor	Tokyo Institute of Technology	Apr 1997
167th Committee	Nano-Probe Technology	Hiroshi Onishi	Professor	Kobe University	Dec 1997
169th Committee	Structural Biology using Diffraction Techniques	Noriyoshi Sakabe	Professor Emeritus	National Laboratory for High Energy Physics	Jan 2000
170th Committee	Redox Life Innovation	Koji Uchida	Professor	Nagoya University	Jan 2000
171st Committee	Optical Network System Technology	Tomohiko Uyematsu	Professor	Tokyo Institute of Technology	Dec 2000
172nd Committee	Alloy Phase Diagrams	Tetsuo Mohri	Professor	Tohoku University	Apr 2001
173rd Committee	Switching Power Supply System for Coming Era	Hirofumi Matsuo	Professor Emeritus	Nagasaki University	Jul 2001
174th Committee	Molecular Nanotechnology	Shunsaku Kimura	Professor	Kyoto University	Oct 2001
175th Committee	Innovative Photovoltaic Power Generating Systems	Makoto Konagai	Professor	Tokyo Institute of Technology	Apr 2004
176th Committee	Process Created Materials Function	Mitsuo Niinomi	Professor	Tohoku University	Oct 2004
177th Committee	System Design and Integration	Ryouhei Sato	Professor Emeritus/ Specially Appointed Professor	Osaka University	Apr 2005
178th Committee	Plant Molecular Design	Hiroshi Ezura	Professor • Provost	University of Tsukuba	Dec 2005
179th Committee	Photonics Information Systems	Ken-ichi Kitayama	Professor	Osaka University	Apr 2006
180th Committee	Risk-Based Plant Management	Jyunichi Sakai	Professor	Waseda University	Apr 2007
181st Committee	Multifunctional Morecular Electronics	Gunzi Saito	Professor	Meijo University	Apr 2008
182nd Committee	Terahertz Science, Technology and Industrial Development	Kiyomi Sakai	Adviser	National Institute of Information and Communications Technology	Oct 2008
183rd Committee	Advanced Water Science and Engineering	Osamu Takai	Professor Emeritus	Nagoya University	Oct 2010
185th Committee	Optical Imaging Technique Development	Hidenao Fukuyama	Professor	Kyoto University	Oct 2011
186th Committee	Radiation Science and Its Applications	Tetsuo Iguchi	Professor	Nagoya University	Apr 2012
187th Committee	Metamaterials	Teruya Ishihara	Professor	Tohoku University	Oct 2012
188th Committee	Electromagnetic-Field-Excited Reaction Fields	Yuji Wada	Professor	Tokyo Institute of Technology	Apr 2014

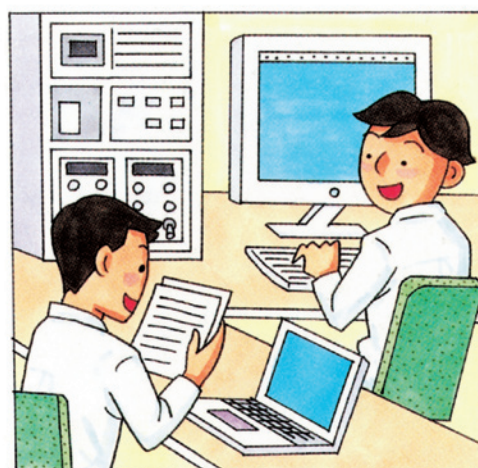
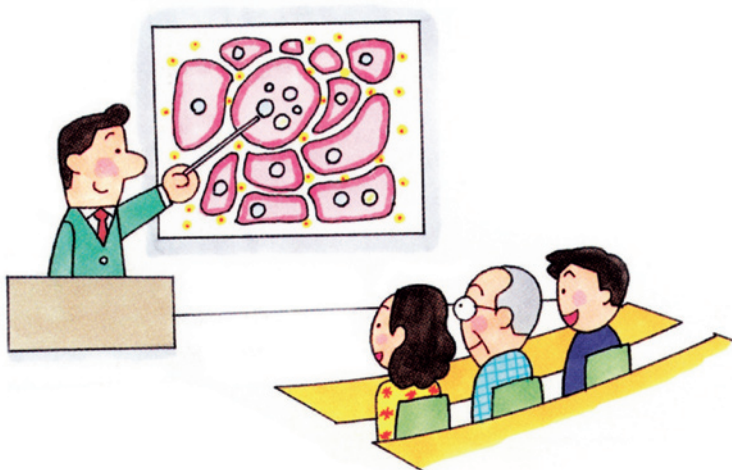


How University-Industry Cooperative Research Committees Are Established

University-Industry Cooperative Research Committees are usually set up by members of the Committees for Research Promotion in Specialized Areas or Frontier R&D Committees, or by members of other research groups. In any case, the organizing researchers must apply to JSPS for approval to establish a committee under this program. The process is as follows:

- (1) The organizers discuss with the staff of JSPS's University-Industry Cooperation and Research Promotion Division in advance the objectives, activities, budget, and membership makeup of the proposed committee. Generally, one committee is made up of about 60 members (30 each from academia and industry) and meets about four times a year.
- (2) Proposals are reviewed and decided upon by the Advisory Council, which meets twice during the fiscal year (around September and February). Consultation with JSPS should be at least three months in advance of dates. Committees start their operations upon approval.

The normal operating period for University-Industry Cooperative Research Committees is five years, which may be extended with the approval of the Advisory Council.



University-Industry Cooperative Research Committees



University-Industry Cooperative Research Committees provide an interface between academia and industry for comprehensive collaboration in merging basic and applied research. As such, the committees accord their members, frontline researchers from the two sectors, a platform for carrying out research and other collaborative activities. Their operations are supported by dues paid by the members from industry.

The first committee was launched in 1933, with over 200 more to follow. As of April 2014, 64 committees, comprising some 3,850 members (2,350 from academia and 1,500 from industry) are currently in active operation.

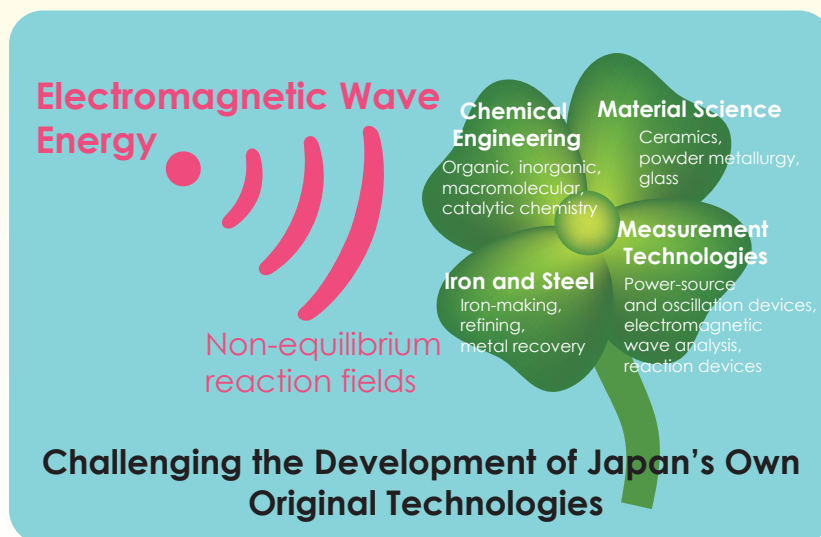
JSPS provides partial support for international symposia organized by the committees and for publishing their research results.



Recently Established University-Industry Cooperative Research Committees

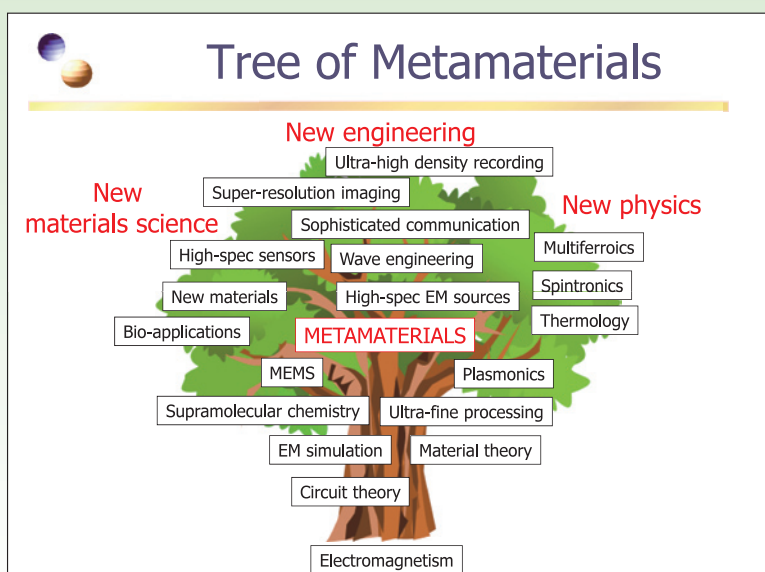
188th Committee Electromagnetic-Field-Excited Reaction Fields

Our committee is taking on the challenge of developing Japan's own original technologies that give impetus to a new national competitiveness in such areas as resource depletion, material cycling, and environmental conservation. The group is exchanging the latest information and advancing high-level scientific discussions on the use of electromagnetic wave energy to create revolutionary technologies that will enable energy saving in material manufacturing, CO₂ emission reduction, shorter operating time, and manufacturing equipment downsizing. We see an urgent need for scientists and technologists who can take the lead in industrializing these technologies. Armed with the revolutionary tool of electromagnetic wave utilization, Japan can create original technologies that will position it as an international frontrunner in related fields. Realizing this objective is the committee's main thrust. Toward that end, we are working to pioneer a new domain that integrates chemistry, material science and life science and uses non-equilibrium reaction fields generated through the interaction between electromagnetic waves and materials, while developing applications for manufacturing technologies.



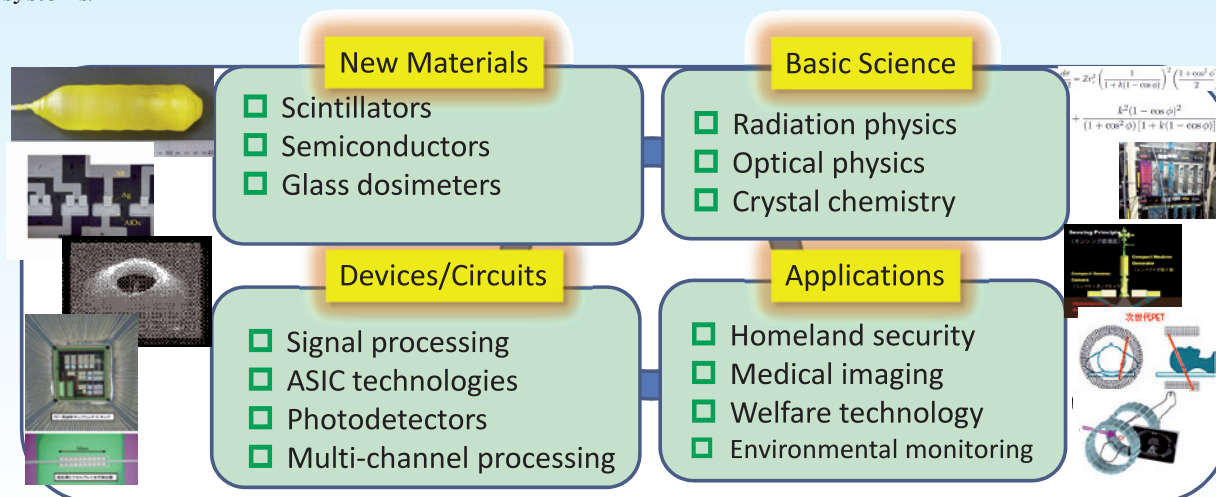
187th Committee on Metamaterials

Extraordinary electromagnetic response, such as negative refraction indices, can be achieved by constructing an artificial structure whose feature size is smaller than the wavelength of interest. Such novel structures are called "metamaterials." They make it possible to achieve such things as sub-wavelength imaging resolution, transparency by electromagnetic wave detouring, and optical frequency magnetism. This committee brings together researchers from academia and industry to discuss new metamaterial concepts, fabrication techniques, and novel phenomena with an eye to their industrial application in the near future.



186th Committee on Radiation Science and Its Applications

Radiation science and technology has in recent years taken on increasingly higher importance in applications across a range of fields including environmental monitoring, medical imaging, homeland security, and basic research. It has now gained special importance in assessing radioactive dosage in the long-term recovery work at the site of the crippled Fukushima nuclear power plant. This committee features collaboration between university and corporate researchers in various fields from upstream (material search/basic science) to downstream (system development/application technologies). Sharing a perception of issues overarching these fields, our team of Japanese all-stars is endeavoring to lead the world in creating new, innovative radiation detecting and measuring systems.



New Committees in Research Promotion in Specialized Areas and Frontier Research and Development


Design and Demonstration of New Materials with New Functions for Industrial Applications

The structure of industry has changed in post-industrial society, creating a necessity to advance material research and to apply basic science in building new, innovative industries. Future targets will include the development of technologies for creating and saving energy and of novel materials with new functions and environmentally friendly properties. To this end, the committee assembles experts from both academia and industry who specialize in such areas as new material manufacture, measurement and analysis of material functions, and theoretical conceptualization. The members will select groups of new candidate materials and offer opinions on how to organize and advance their developments.

Advancing Innovative Research on Chemical Biology in Japan

Chemical biology aims to understand a variety of biological functions using chemical compounds as tools. Chemical biology research is expected to succeed in developing more effective medicinal drugs and pesticides. To date, seeking out drug seeds from large chemical libraries has been the typical mode of research used by bio-industry and pharmaceutical companies. Recently, researchers in academic institutions have also started conducting large-scale screening of chemical libraries. Integrating chemical biology research conducted in universities, government research institutes and corporations can advance chemical biology to novel research domains, which contribute research across a wider range of fields, beyond drug discovery.

The members of this committee, hailing from both academia and industry, are working to promote academia-industry collaboration and develop optimum infrastructures and methodologies for advancing chemical biology research.



Security Initiative for Open Global Information Systems

Security-related incidents are on the rise in today's network society, spurred by many new types of cyber and targeted email attacks that cause information leakages and system breakdowns. The impact of such attacks can be far-reaching due to hardware and software vulnerability in information systems and inadequate security validation schemes for open global information systems. Now, a small number of black-hat hackers can relatively easily cause serious damage to the social infrastructure. The aim of this Research Committee is to investigate, from both the perspectives of technology and governance, the state of system and information security and measures that are and will be taken to ensure the security of open global information systems. We also intend to devise a research and development strategy for future secure systems, establish a mid- to long-term plan for the training and development of security personnel, and create a PPAC (public-private-academia collaboration) system for handling cyber security threats and incidents.



Flexible ICT Platform for Various Services for 10 Years Ahead and Industry-Government-University Collaboration Scheme

What kind of applications and services will emerge in the ICT market 10 years after the advent of the "cloud" era? What sort of ICT platforms will support them? We discuss such topics from both technical and business vantage points. In conducting this study, we are merging two approaches: One considers the feasibility of developing the required upper-layer service and element technologies, while the other seeks to predict the markets that will be created through advances in devices and other lower-layer technologies. We are also looking at ways to refine, expand and globally promulgate Japan's technologies and products, while creating an industry-government-academia framework that works synergistically to strengthen each sector while contributing to the development of excellent human resources. Finally, our discussion is aimed at establishing an R&D strategy that regenerates Japan's global competitiveness in the ICT domain.

Construction of Resilient Social and Life Space

Since the 2011 Tohoku Earthquake, an acute focus has been placed on the need to construct crisis-resilient communities and life spaces. In addition to technologies for solving challenging issues confronting Japan, such as environmental conservation and population aging, the development of crisis-proofing technologies may give Japan's international competitiveness a new edge. Therefore, this committee, comprising members from universities, national and local government research institutes, and industry, is advancing a discussion on S&T strategies and human-resource development approaches targeted at creating robust crisis-resilient societies.



Radiation Effects and Crisis Communication

When confronted with a dangerous situation like that of the Fukushima Daiichi Nuclear Power Plant accident, effective "crisis communication" is needed to reduce loss and damage to a minimum. To optimize it, the role of the science community needs to be clarified and the parameters of its involvement defined. In this light, the committee is tackling three sub-themes: (1) Analyzing and compiling information related to the effects of radiation based on the latest knowledge; (2) advancing research on developing consensus within the science community and effective means of disseminating that information; and (3) formatting and standardizing radiation measurement. Thuswise considering ways to strengthen crisis communication, we are working toward proposing strategies for mitigating loss and damage from nuclear power plant accidents, should they occur in the future.

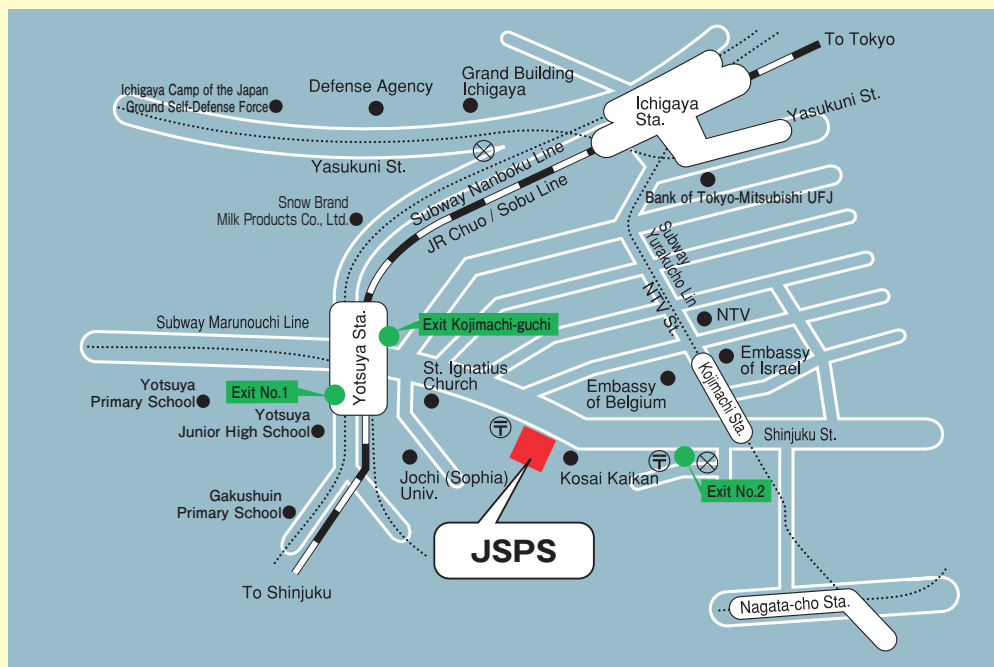


Future Prospect of Nuclear Technology as Contributing to Human Welfare

Our committee has many members who are young researchers and technologists affiliated mainly with private corporations and research institutions. With a focus on the Fukushima nuclear accident, we are taking a fresh look at the future of nuclear-power technology while revisiting the original intent of its development. The discussion we are advancing seeks answers to various critical questions. They include, How should "safety" be defined when it comes to nuclear power? What problems and obstacles need to be overcome? Over and above concrete possibilities for technological development, what sort of ethics and sensibilities should the researchers and technologists have who work on developing nuclear power? These discussions are advanced in a candid atmosphere without concern as to whether members are for or against the use of nuclear power. Through them, it is our aim to foster the next generation of nuclear scientists and technologists who possess a considerable depth and breadth of knowledge and share a common sense of ethics.

For further information on Committees,
please visit our website at <http://www.jsps.go.jp/english/e-soc/index.html>

JSPS Offices in Tokyo



- About five-minutes walk from Kojimachi Station (use Exit No.2) on subway Yurakucho Line
- About five-minutes walk from Yotsuya Station (use Exit No.1) on subway Marunouchi Line or Nanboku Line
- About five-minutes walk from Yotsuya Station (use Exit Kojimachi-guchi) on JR Chuo Line



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