SUMITOMO ELECTRIC
Connect with Innovation

R&D

Research & Development

Each company of the “Sumitomo Electric Group” combines its unsurpassed creativity with knowledge and experience to generate ideas that allows the group to contribute to society.

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Analysis Technology Research Center,
Frontier Technologies Laboratory,
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Cyber-security R&D Office,
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Information Network R&D Center,
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https://sumitomoelectric.com/

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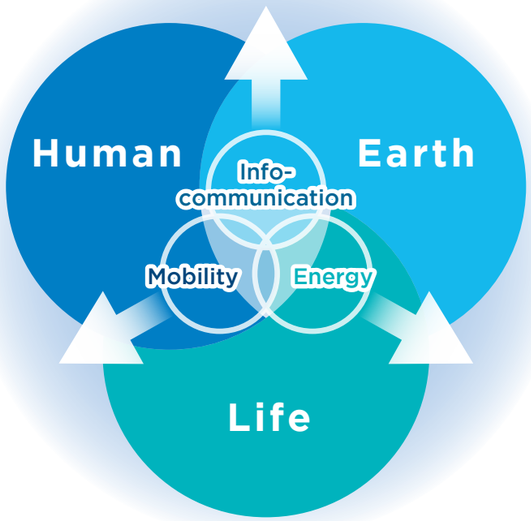
SUMITOMO ELECTRIC GROUP

R&D Long-Team Vision and Organization

Fundamental Approach

To achieve the Group's management principle of "Pursuing top technologies, evolving technologies that 'connect and support', and generating innovation through the Group's combined strengths", it's important that we (1) further strengthen our technologies in the business domains in which we operate and (2) create new products and services in new business domains.



Strengthen technologies in current business domains

We are increasing innovation in materials and device technologies that support the advancement existing business domains.
1) Energy Domain: cable technology that contributes to the strengthening of power grids and energy management technology that is essential for the utilization of renewable energy
2) InfoCommunication/Electronics Domains: technologies that achieves high speed and large capacity while realizing small size and low power consumption
3) Mobility/High Performance Products Domains: technologies for CASE (Connected Automated Shared Electrified Vehicle).

Create new products and services in new business domains

We are exploring next-generation research and development themes. By backcasting from the social issues of 2030 and beyond, we have defined three technology fields to focus on: "Earth", "People", and "Life". In “Earth” related fields, we will promote technological development related to GX (Green Transformation) for the realization of a sustainable society. In “Human” related fields, we will focus on the technologies necessary for individuals to maximize their abilities. Finally, In “Life” related fields, including in the virtual space, we will focus on technologies that connect person-to-person and person-to-things.
We will extend our strengths fundamental technologies such as materials and devices to support the above three fields.

Three pillars of our strategy

To revitalize and speed up research and development to create diverse technologies, we are strengthening our efforts under three strategic pillars.

Needs-Driven

Driven by the demands of society

Exploring themes derived from backcasting of an ideal society challenges of 2050.

Speedy

Acceleration of the R&D process

Actively introduce materials informatics(MI), process informatics(PI), etc, thereby accelerating the development of materials and processing technologies, on which we pride ourselves, and enhance process efficiency in the from of automation, remote operation, etc.

International

Collaboration with overseas partners

- Global cooperation of SEG to share technology, know-how, ideas, etc
- Alliance with overseas companies, academic institutions, etc

R&D Organization

R&D Unit

- Information Network R&D Center
- IoT R&D Center
- Analysis Technology Research Center
- Frontier Technologies Laboratory
- Advanced Materials Laboratory
- Energy and Electronics Materials Laboratory
- Optical Communications Laboratory
- Transmission Devices Laboratory
- Cyber-security R&D Office
- FEX Development Office
- R&D Planning & Administration Division

- Innovation Core SEI, Inc. (ICS)
- SEI Automotive Europe GmbH Innovation Core Department (ICS-Euro)

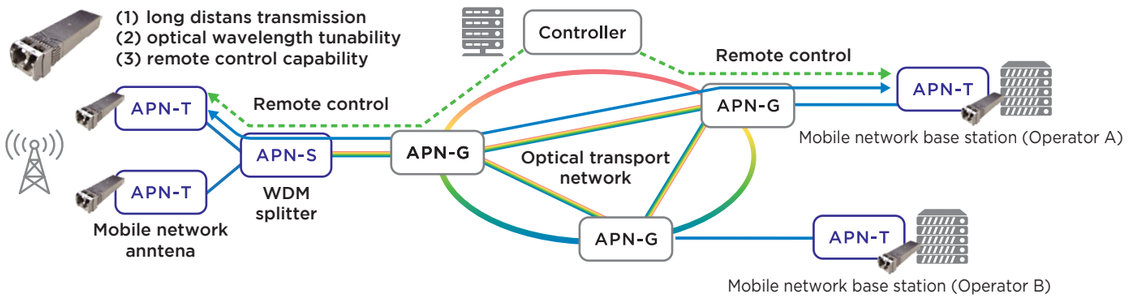
Information Network R&D Center

We are conducting research and development in optical communication technology for next-generation fiber-to-the-home (FTTH) and all-photonics network (APN), as well as wireless communication technology for 5G and Beyond5G (6G), all of which are essential for achieving a high-capacity, low-latency, and low-power-consumption network infrastructure.
Additionally, we are undertaking efforts to establish a safe, comfortable and green traffic society through the high precision type of pedestrian detector and information handling of large amounts of vehicle and traffic data.

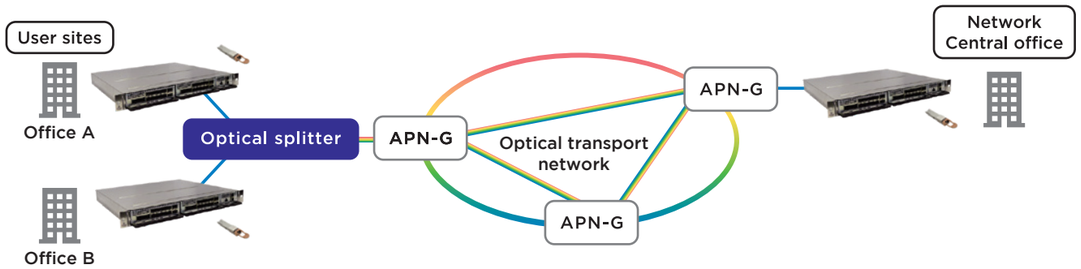
Optical network systems

All photonic networks

Optical network communication is advancing in terms of speed and capacity, with increasing demand for improved energy efficiency and reduced network latency. The all photonic network is a technology that transforms conventional network devices and equipment, which required conversion between optical and electrical signals, into photonics-based (optical) technology, enabling high-capacity, low-power, and low-latency communication.
At our center, we are advancing research and development of optical transceivers and network equipment, which form the foundation of the all-optical network. We are working on the research and development of optical transceivers (APN-T) and wavelength division multiplexing splitters (APN-S) with the goals of achieving an all-optical network between mobile network base stations and antennas. Specifically, we focus on: (1) long distance transmission, (2) optical wavelength tunability, and (3) remote control capabilities. It has the feature of being able to connect any network device to the all-optical network.

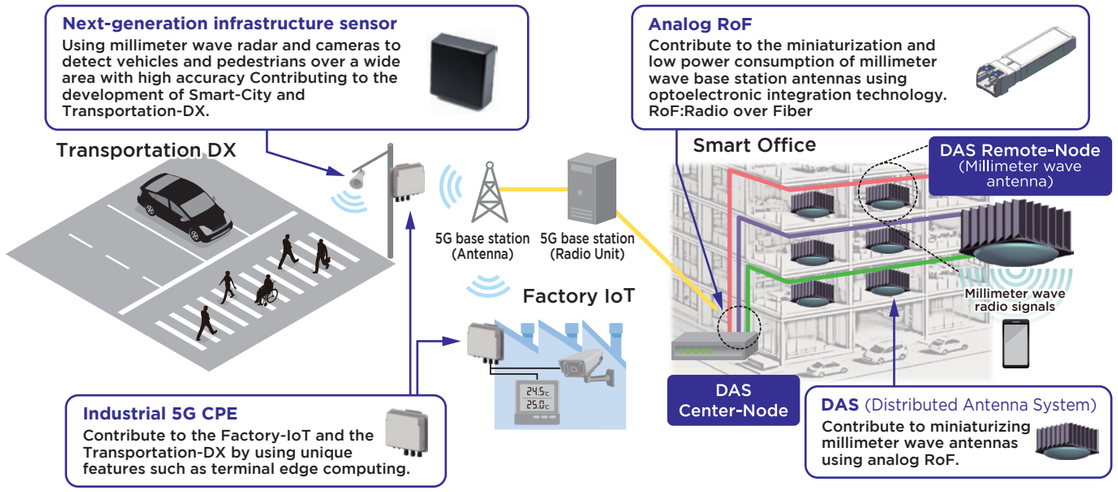


In order to achieve an all photonic network for higher-capacity (400 Gbps-level), we are focusing on the research and development of network devices that utilize optical coherent communication technology, enabling one-to-many communication. We are considering the application of this technology to the network between central offices and user sites.



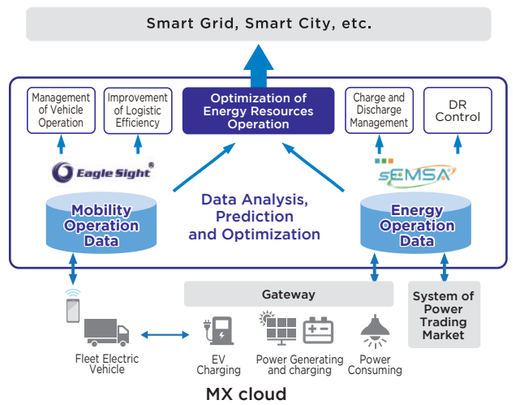
Wireless systems

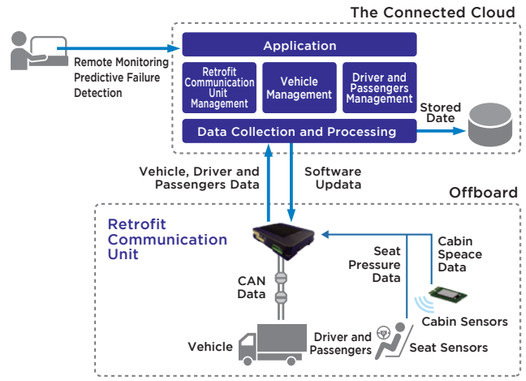
The IoT and DX markets are growing rapidly with the use of 5G, which features enhanced Mobile Broadband (eMBB), Ultra Reliable Low Latency Communications (URLLC), and Massive Machine Type Communications (mMTC) and utilization of sensors that can detect objects such as people and vehicles with high accuracy.
We survey market needs, and then develop wireless devices and optical / wireless modules for 5G, Beyond 5G, and transport infrastructure applications based on our wireless / antenna technology, optoelectronic technology, and signal and data-processing technology.



Mobility systems

As advanced driver assistance systems and autonomous driving progress, there is a growing need to monitor and provide services related to factors such as ride comfort, interior comfort, driver's fatigue and driver's health. We are developing a cloud system (Connected Cloud) for data collection and analysis necessary to realize these vehicle services.
Furthermore, with the goal of realizing a safe, secure, and environmentally friendly transportation society, we are developing a platform (MX Cloud) that enables the integrated optimization of vehicle operations and energy supply and demand by analyzing and predicting mobility and energy operation data.



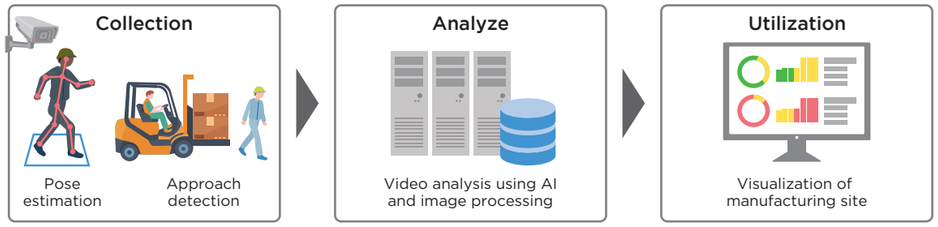


IoT R&D Center

At IoT R & D Center, we utilize IoT/AI technologies to support research and development and manufacturing. In order to promote this, we are engaged in system development of a DX platform connecting research and development with mass production, as well as nurturing talent to lead the next generation.

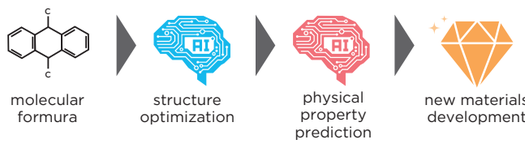
Improving Productivity and Safety using Video Analysis

Utilizing video analysis tools for enhancing productivity and supporting safety



Ultra-fast Material Discovery through MI*

Enabling high-precision predictions and rapid exploration, even for unknown compositions.

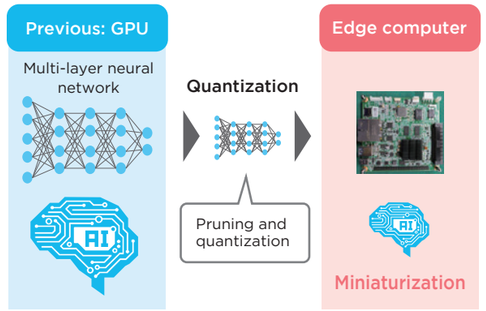


Speedy Research and Development

Lab

Achieving High-Speed AI with Quantization and Compact Computers

By developing quantization technology and small edge computers, we realize compact and high-speed AI that enables real-time visual inspection on-site without any time lag.

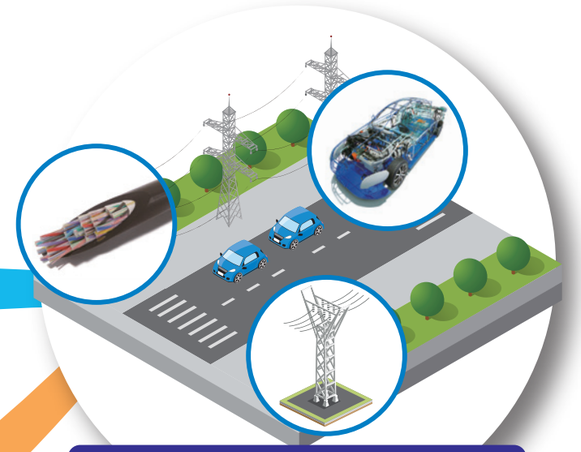


AI-based Predictive maintenance

AI analyzes equipment and manufacturing data to detect signs of potential issues or troubles in advance.

Safe and adaptive manufacturing

Factory



Good Products that Contribute to Society

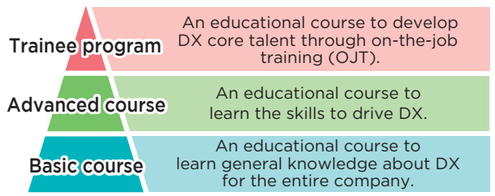
Products

DX Tool

DX Talent

DX Talent Development Program

To develop talent that drives digital transformation in each department.We provide a three-step program.
Our trainee program allows individuals to gain practical experience in problem-solving alongside mentors, fostering hands-on skills.

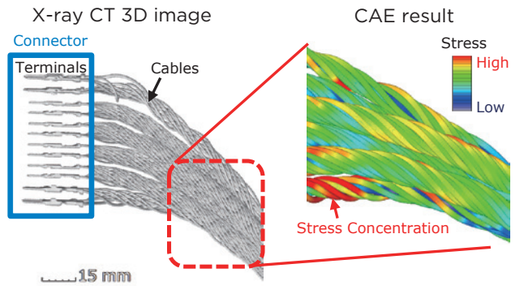


*MI: The technology to efficiently predict and discover new materials using AI

Analysis Technology Research Center

We support the manufacturing and development of our group's products through advanced analysis and CAE (Computer Aided Engineering) technologies. Our main bases are in our Osaka, Itami and Yokohama works. We have bases in external facilities such as the Kyushu Synchrotron Light Research Center.

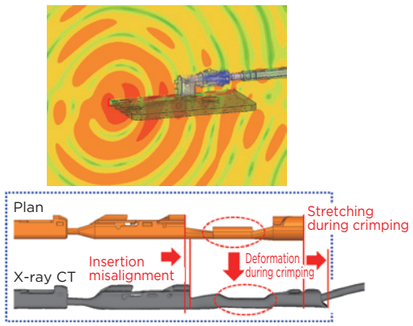
Electric wire service life prediction



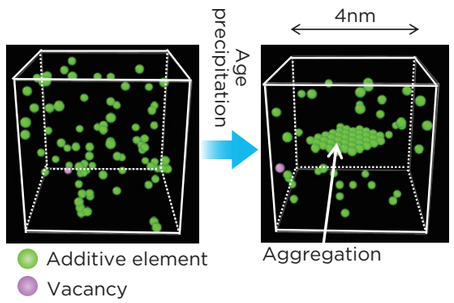
Automotive doors and robot arms incorporate electric wires and cables in moving parts. We are developing CAE technology for predicting the service life of these cable and wires by utilizing X-ray CT and AI techniques that can obtain their twisting and bending trajectories automatically.

High frequency electromagnetic analysis for high-speed communication

We use high-frequency electromagnetic analysis to develop products that support high-speed communication technologies such as CASE and 5G. In order to capture electromagnetic waves with shorter wavelengths due to higher speeds, we make the most of large-scale computing servers, and we are also promoting collaboration with actual observation technology to take into account minute changes in shape during product processing.

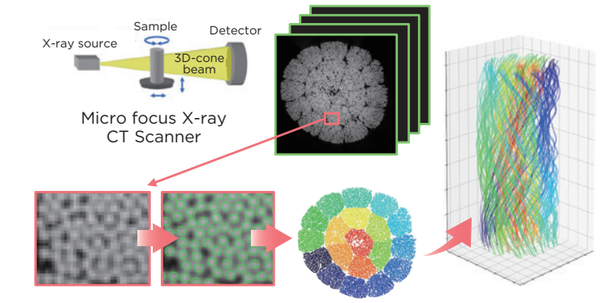


Computational materials design for aluminum harnesses



When certain elements are added to aluminum wire, their atoms aggregate over time to increase the strength of the wire. We are developing a simulation technology that can visualize this aggregation behavior in order to select the additive elements and to determine the aggregation conditions.

Quantification of three-dimensional structures with data analysis technology



CT images of Electric wire cable(173x19=3287cabels), and the quantification result of these image

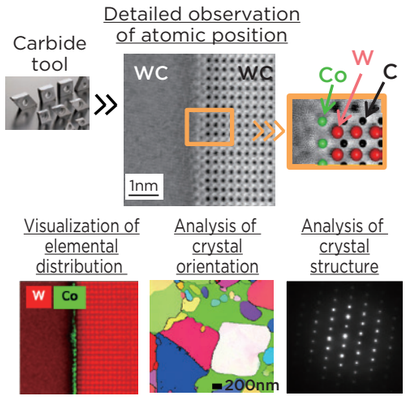
Trajectory data of each wire

We visualize the three-dimensional structure of the product. We quantify the structure with the latest data analysis technology. And, We visualize the three-dimensional structure of products and quantify it with the latest data analysis technology and use this to solve or improve upon product quality problems using DX technology.

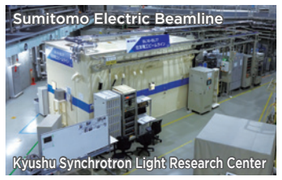
Fine structure analysis with atomic-level resolution

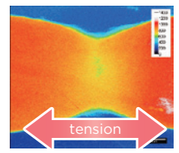
We are developing technology using scanning transmission electron microscopes, focusing on crystal orientation analysis as well as conventional microstructural analysis. By using this technologies, we are developing high quality devices and materials.

Scanning Transmission Electron Microscope (STEM)

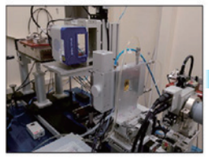


Atomic level investigation using synchrotron radiation and first-principle calculations

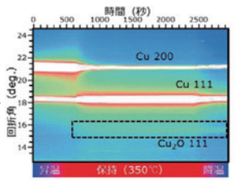




Contour plot of thickness distribution just before fracture



In-situ analysis system using synchrotron radiation



Crystal structure analysis by in-situ XRD

We develop analysis technologies using synchrotron radiation, neutrons and other leading analysis technology in order to investigate material structures at the atomic level.
We utilize two beamlines of synchrotron radiation that are exclusive to Sumitomo Electric Group. Furthermore using simulation techniques such as first-principles calculations, we explore new materials through the mechanism that gives them their high performance charactersitics.

Frontier Technologies Laboratory

Predicting future social needs through the study of world trends including SDGs, DX and GX, we are developing revolutionary technologies that will be required for our business in the future.

Redox flow battery

For power grids that use renewable energy-based power generation, the role of storage batteries is vitally important, charging and discharging power in response to fluctuations in the amount of generated power. The redox flow battery is suitable for irregular, highly fluctuating charge-discharge operation. Moreover, the amount of power stored in it can be accurately monitored and controlled. Therefore, it is an ideal storage battery for smart grids designed for efficient use of renewable energy sources such as solar and wind. The redox flow battery is considered a key device toward achieving carbon neutrality. While we have placed redox flow batteries on the market, we are working on further product development with the aim of putting them into full practical use.

High-temperature superconductor wire

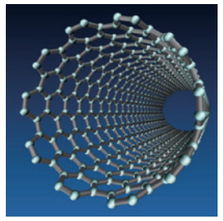
Development of a low-cost, rare-earth-based, high-temperature superconductor is under way using Sumitomo Electric's proprietary chemical solution deposition method. This superconductor is 200 times superior to copper wires in current carrying capacity at –196°C using liquid nitrogen.

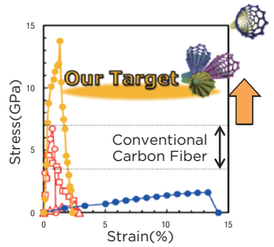
Moreover, Sumitomo Electric has developed the world's first stable superconducting joining technology and created a coil that can produce a magnetic field with permanent currents. These technologies are expected to enable high-temperature superconductors to be deployed in nuclear magnetic resonance (NMR) devices and magnetic resonance imaging (MRI) devices.

In addition, use of the high-temperature superconductor is anticipated in magnets for small fusion reactors and superconductor motors.

Carbon Nanotubes for Next Generation Wire

Applying highly oriented carbon nanotube (CNT) technology, we have succeeded in the synthesis of ultra-strong wire with 10 GPa tensile strength, which is two times higher than conventional carbon fiber. Employing our CNTs, we will contribute to the realization of space elevators that enable future space travel.

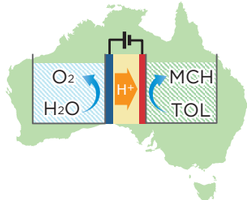




Hydrogen Society and Hydrogen Production

MCH Electrolytic Synthesis System

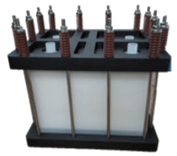
Hydrogen is a clean energy source which emits no greenhouse gases. We are conducting research on the cost reduction of mass production of hydrogen, constructing a demonstration system in Australia known for its plentiful sunshine.



AEM-type Water Electrolysis System

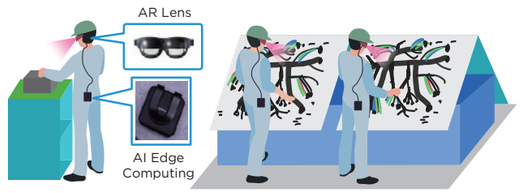
Our company is advancing the development of an AEM (Anion Exchange Membrane) type water electrolysis system, which has the potential to produce hydrogen at a low cost without using rare precious metals.

The AEM type water electrolysis system has a high technical affinity with redox flow batteries, and by applying the cell stack technology developed for redox flow batteries, we aim to develop a high-performance and highly reliable water electrolysis system, contributing to the realization of a green society.



CORE-DX (Digital Revolution)

Employing cutting-edge DX and AI technologies, we are tackling the realization of next generation smart factories with extended reality (XR), and the creation of new products and new businesses. By solving social issues using DX, we will construct a future society in which everyone can enjoy a high quality life, and achieve the SDGs.

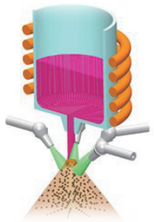


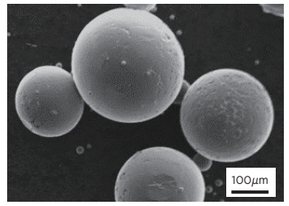
Advanced Materials Laboratory

We create unique metallic and inorganic materials through process innovation using our original ultra-high pressure and powder metallurgy technologies, and computational science. We contribute to the expansion of our business in industrial materials and other business fields through the development of highly functional materials and parts including cemented carbide cutting tools, diamonds, ceramics, sintered ferrous alloy parts, and special steel wires.

Powder metallurgy

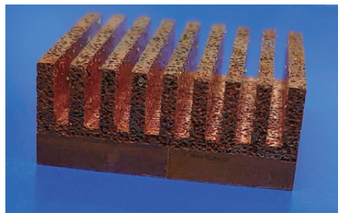
We have developed cemented carbide and cermet for cutting tools and sintered ferrous alloy and aluminum alloy parts for automobiles. We are now developing original metal powder as P/M raw material using atomizer, and porous metal which contribute to heat management technologies.



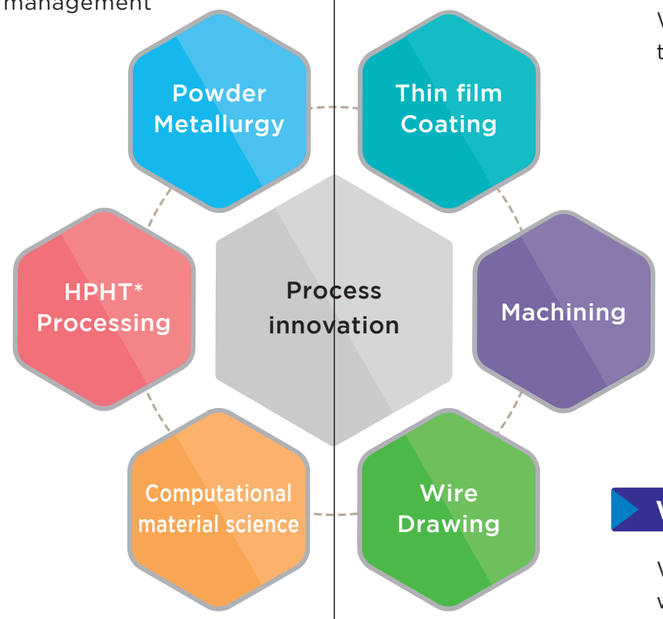


Metal Powder for P/M

Cemented carbide materials

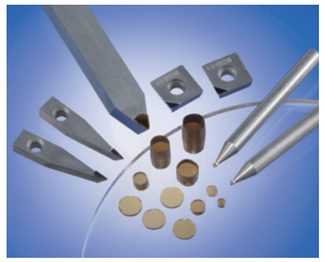


Porous metal heat exchanger

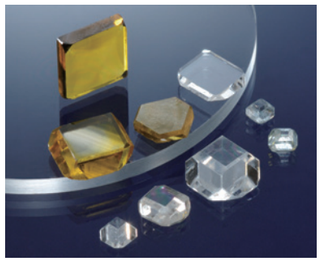


Ultra-high pressure technologies

We have developed materials such as sintered diamond, nanopolycrystalline diamond and highpressure synthetic diamond, and processes using our ultra-high pressure technology. Recently, we have begun development of new diamond materials with improved mechanical strength and electrical properties.



Nano-polycrystalline diamonds

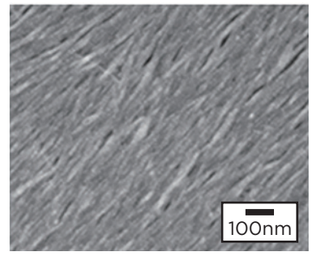


Synthetic single crystal diamonds

Thin film coating technology

We are developing a coating technology to apply a ceramic film with high hardness and good adhesion on cutting tools. We are also developing nano filtration membrane for use in the environmental field.

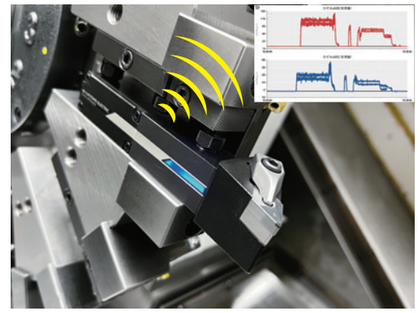
PVD coated inserts



Nano filtration membrane

Machining technology

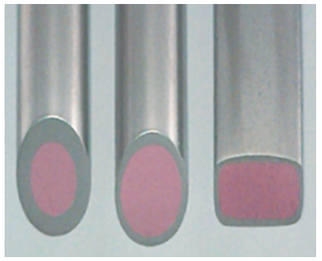
We are developing high value cutting tools by using machining monitoring techniques and advanced tool fabrication processes including 3D printing.



Sensing tools

Wire drawing technology

We are developing high performance and strength steel wire such as spring wire, steel tire cords and prestressed concrete wire, and high strength electric wire with our drawing, heat treatment and electroplating technology.

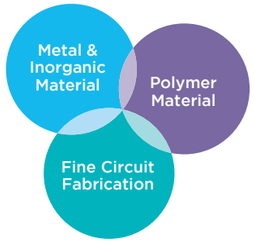


High-strength conductive wire

Steel tire cord

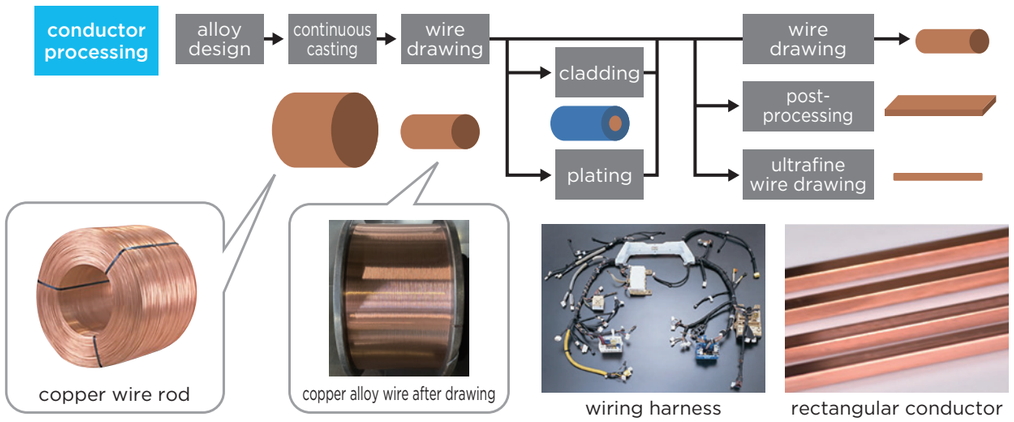
Energy and Electronics Materials Laboratory

We contribute to the development of products and technologies in the Group's extensive business fields by leveraging our core technologies for metal, inorganic, and polymer materials as well as fine circuit fabrication. Moreover, to contribute to innovative businesses in new fields, we strive to refine and expand our core technologies.



Metals and inorganic materials technology

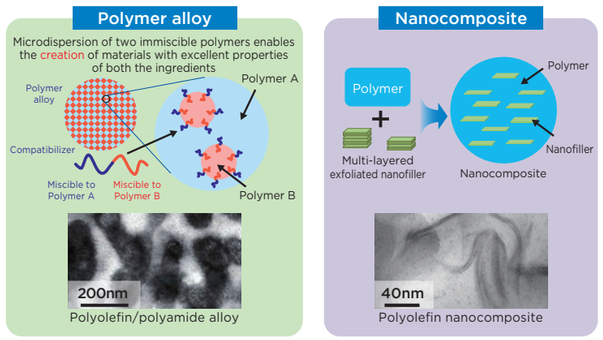
Having developed distinctive conductors using techniques such as continuous casting and plastic processing as well as designing of new alloys and composite material technology dealing with plating and cladding, the laboratory drives Sumitomo Electric's business relating to various types of wiring including wiring harnesses.
In addition, the laboratory has undertaken development of materials and processes helpful towards resources recycling and carbon neutrality.

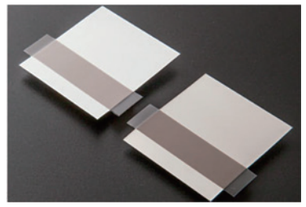


Polymer material technology

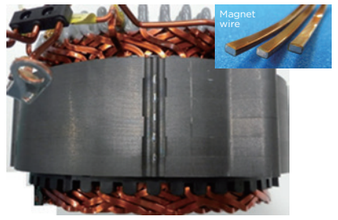
Employing polymer synthesis and resin formulation technologies, we have been developing a wide array of products such as electric wires and cables in the fields of environment & energy, electronics, and automotive, as well as magnet wires for environment-friendly vehicles. We are also working on the development of newly functional and high performance polymer materials through nano-sized material structure control (polymer alloy and nano-composite).

Polymer synthesis and resin formulation




tab lead


Composite cable for electric powered parking brake



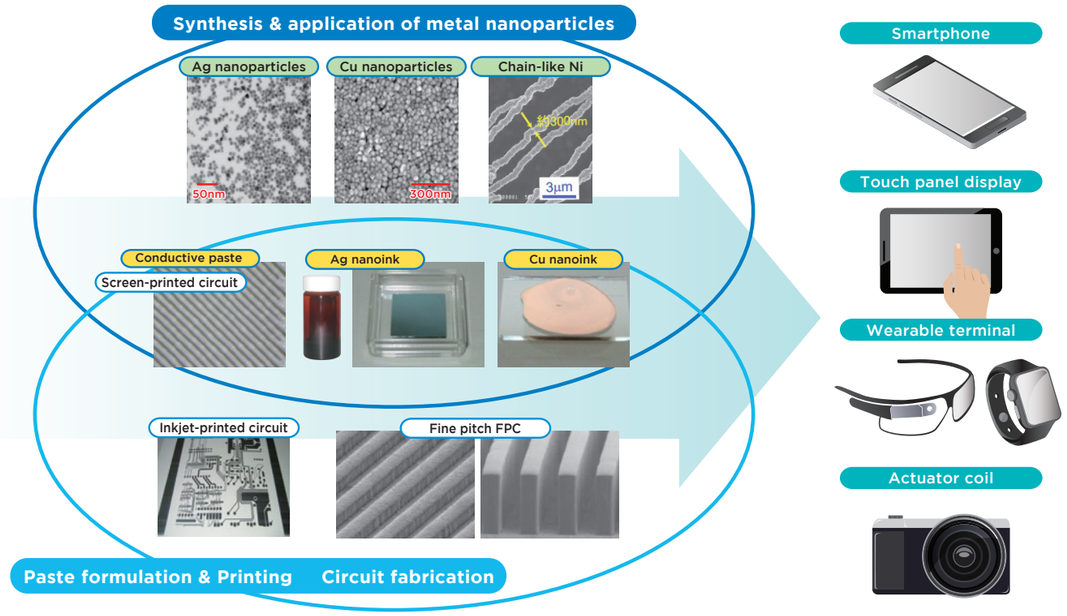
Magnet wires for environment-friendly vehicles


HVDC power cable for interconnector


AC power cable for offshore wind power generation

Fine circuit fabrication technology

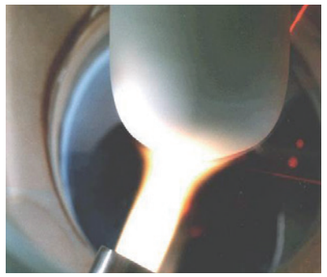
In line with the trend toward higher-density and finer circuits, we are working on development of various metallic nanoparticles and of ink and paste containing such nanoparticles. We are also exploring their application to our electronics products.



Optical Communications Laboratory

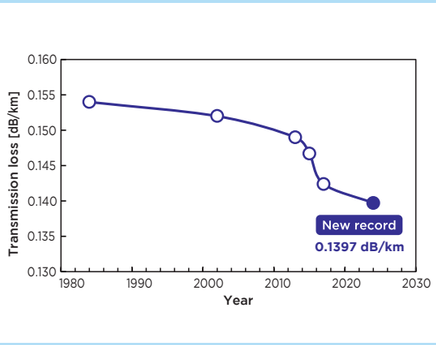
To contribute to the development of a connected society, we are pushing ahead with continuous innovation in optical fiber technologies fundamental to broadband communication networks and their expansion into data centers and households.
We are also working on the application of optical technologies to new fields.

Optical fiber



Z-PLUS Fiber® 150

Since the early 1970s, we have developed a vapor-phase axial deposition(VAD) method, a technology originating in Japan, to produce optical fibers efficiently. Based on this technology, we have realized wide varieties of innovations including advanced optical fibers and related fiber-based optical technologies.

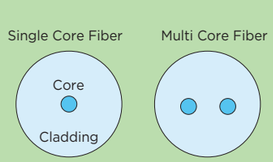


Ultra-low loss optical fiber

with pure silica core
Our ultra-low loss optical fibers based on ultimately-pure-silica core glass technology are the best mediums for long-distance high-capacity optical communication systems. They are now widely used especially for submarine optical cables. Through our continuous innovation in glass and coating technologies, we achieved a transmission loss of 0.1397 dB/km at 1566 nm wavelength in March 2024. It is still the world record for lowest loss in the field of the solid core optical fibers.

World's First Mass Production of Multi-Core Fiber (Announced in September 2023)

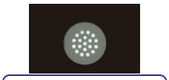
With years of experience in low-loss optical fiber technology and as a result of our world-leading research and development in Multi-Core Fiber (MCF), we have developed the ultra-low-loss MCF "2C Z-PLUS Fiber® ULL" and became the first in the world to successfully mass-produce it.



2C Z-PLUS Fiber® ULL

Next generation optical fibers/Connection technologies

We are conducting R&D in innovative multi-core optical fibers (MCF) and related connection technology that overcomes the limitations of conventional standard single-core fiber and paves the way for petabit optical transmission.

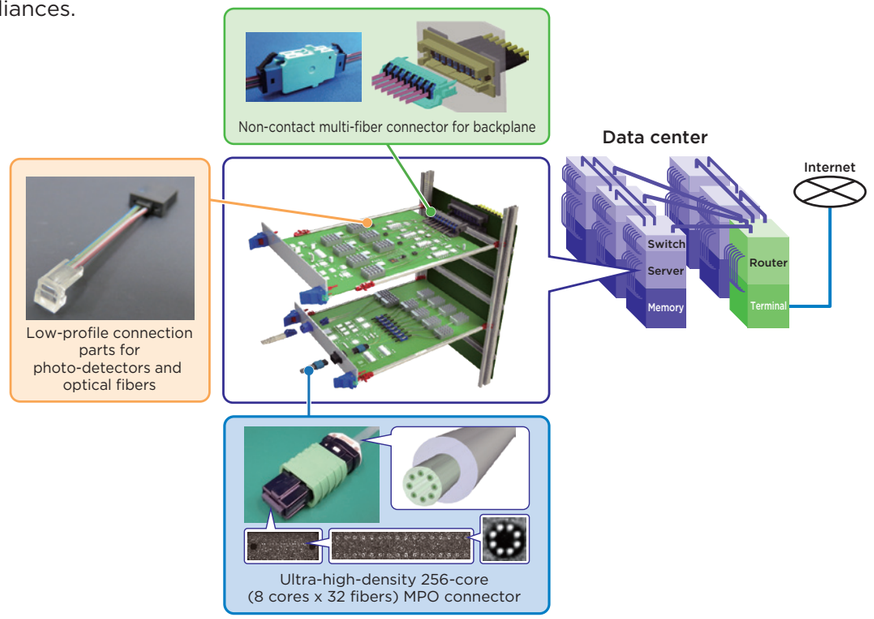
Fiber type	4-core coupled MCF	4-core uncoupled MCF	8-core uncoupled MCF	19-core uncoupled MCF	19-core coupled MCF
Cross-sectional image					 Achieving the world's highest transmission capacity[8] (announced on March 15, 2023)
Claddingdiameter [μm]	125	125	125	267	125
Features	Low loss for long distance transmission[1]	Having optical compatibility with standard fiber[2),3)]	For short distance transmission in the 1.31 μm wavelength region[4]	6 modes (i.e. 114 spatial channels) for 10 petabit/s transmission[5),6)]	Ultra high density for long distance transmission with 1.7 petabit/s transmission[7]

1) http://www.sei.co.jp/company/press/2016/03/prs023.html
2) https://group.ntt/jp/newsrelease/2017/08/08/170808b.html
3) http://www.sei.co.jp/company/press/2017/prs083.pdf
4) http://www.sei.co.jp/company/press/2015/03/prs022.html
5) http://www.kddi-research.jp/newsrelease/2017/092201.html
6) http://www.sei.co.jp/company/press/2017/prs097.pdf
7) https://sumitomoelectric.com/jp/press/2023/03/prs034
8) Standard cladding diameter (125μm) optical fiber conditions

Bundled Fan-In/Out device structure and appearance

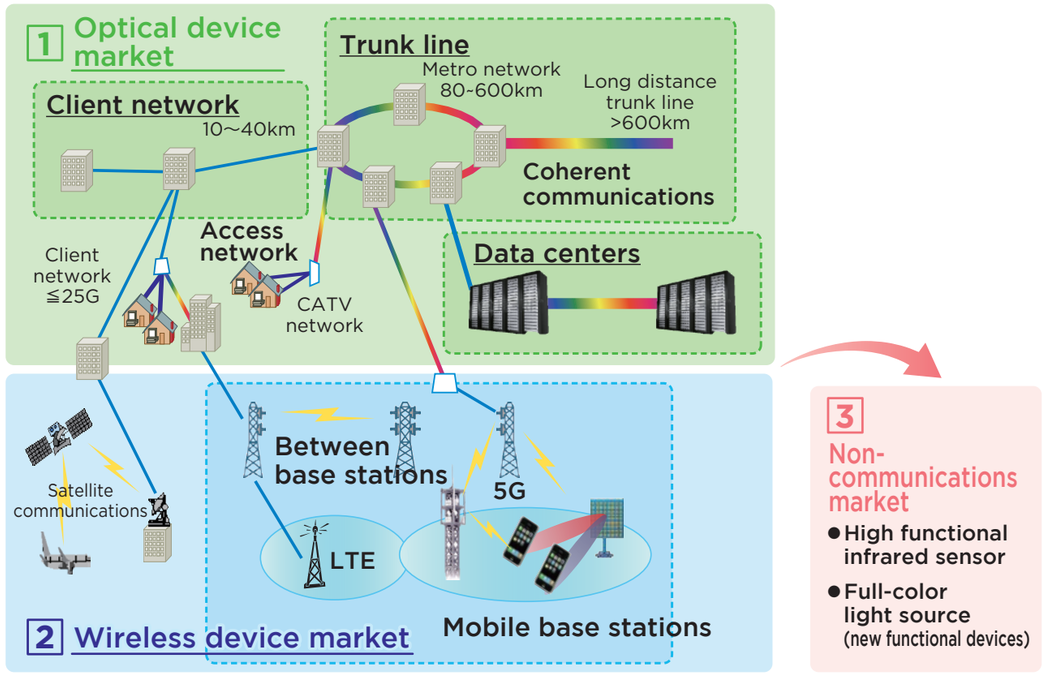
High-capacity interconnection technologies

We are developing high-capacity interconnections using our metal and optical cable technologies for rapidly expanding data centers, where high speed as well as low power consumption are required. We are also working on the development of new high speed cables for appliances.

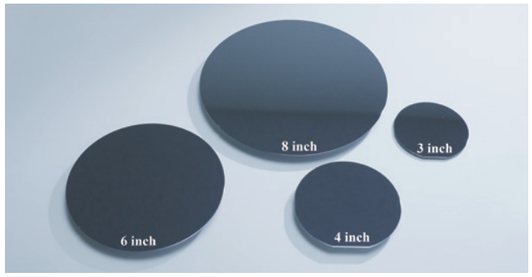


Transmission Devices Laboratory

Our unique technology encompasses semiconductor crystal growth, epitaxy, processing, high-precision assembly of optical and electronic devices, and optical transceiver design. Using the complete spectrum of technology we possess, we are developing advanced compound semiconductor materials and related products for two major communications markets, that is, optics and wireless. We also aim to enter the non-communications market employing our cultivated elemental technologies.

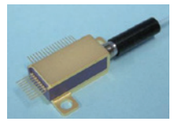


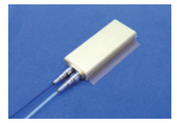
Compound semiconductors and their applications

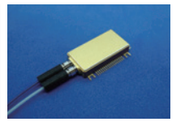


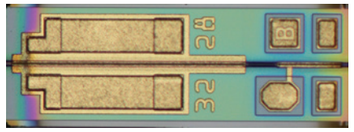
We are a pioneer in compound semiconductors, which are applied to various products where silicon cannot be used. We have commercialized a wide array of materials, and are now developing a crystal growth process with higher quality and a larger diameter as well as new materials for cutting-edge electronic devices.

Optical device


Tunable light source


Multi-level modulator

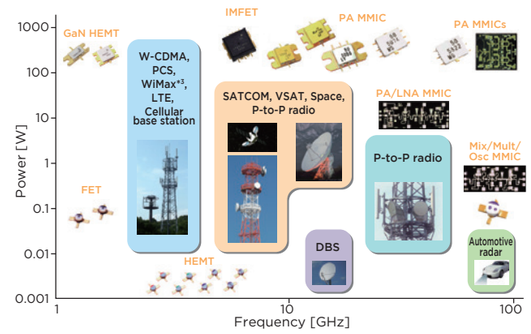

Coherent receiver


Modulator integrated laser chip

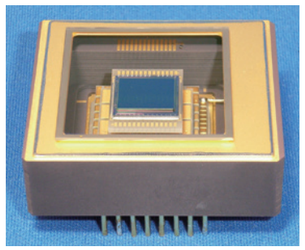
We are developing semiconductor devices for optical-electrical signal conversion in optical communications systems. In trunk lines, digital coherent technology is used to realize 10 Tbit/s-class ultra-high capacity transmission. As key components, we are developing high-power tunable narrow-linewidth light sources, multi-level modulators, and coherent receivers employing our compound semiconductor technologies. For client networks and data centers, we are developing optical subassemblies (OSA) and higher data rate optical transceivers. To cope with the rapid growth of optical network capacity, we are tackling miniaturizing and energy-saving technologies as well as higher transmission speed.

Wireless device

We developed gallium arsenide (GaAs) HEMTs ahead of our competitors and have supported the expansion of wireless communications. Applying this technology to gallium nitride (GaN), we have greatly contributed to the miniaturization and higher efficiency of 4G(LTE) and 5G base stations. And for next generation wireless networks, we aim to create advanced devices with higher frequency and higher efficiency. In addition, by using high power and high efficiency features, we contribute to realize higher capacity of radio back-haul and satellite communications, and solid state radar.



Infrared sensing device



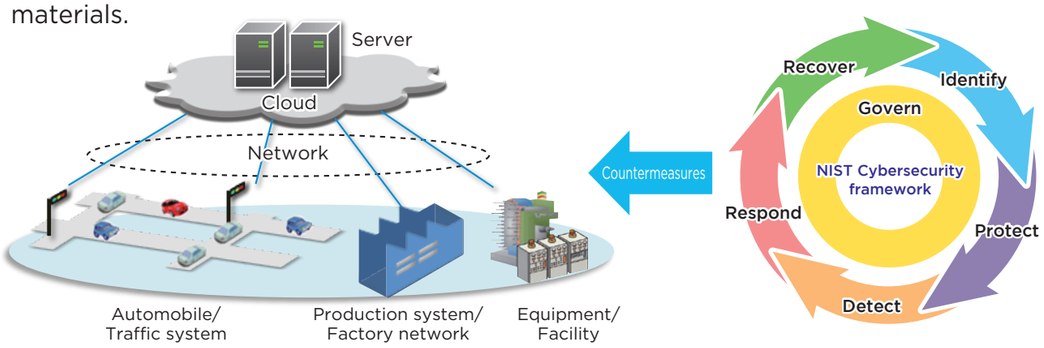
Extremely high sensitivity photodetectors and quantum well infrared imaging sensors with new materials are being developed using elemental technologies of photodetectors for optical communications. We are creating new sensing device markets by realizing higher sensitivity, higher operating temperature, and environment-resistant.

External activity

We are actively involved in fostering new research themes by participating in joint research with many universities and private companies and in national projects, as well as participating in and presenting at many academic conferences in Japan and abroad.

Cyber-security R&D Office

We are developing countermeasure technologies against cyber attacks for our products and production facilities in our five business segments, that are info-communications, automotive, environment & energy, electronics, and industrial materials.



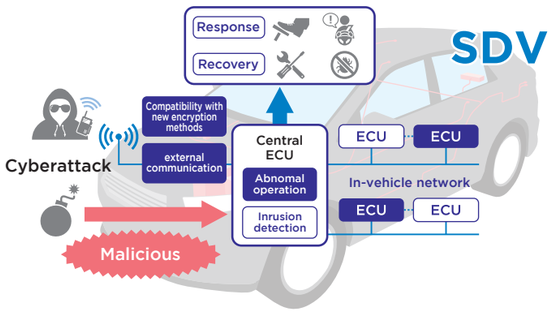
Concept of our cyber-security research

Automotive security

We are focusing on developing countermeasure technologies against cyber and direct attacks that are applicable to the latest automotive E/E architecture adopted by autonomous driving vehicles and software-defined vehicles.
Due to the need for enhanced safety and security in vehicles, we are conducting research that includes the analysis of control signals to prepare for cyber attacks on in-vehicle networks, the development of attack detection technologies using machine learning, and the application of the latest cryptographic techniques to in-vehicle systems.

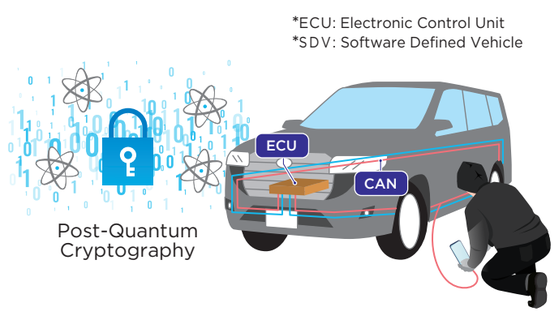
From addressing PQC (Post-Quantum Cryptography) to security measures at the physical layer

With advancements in quantum computing technology, traditional cryptographic technologies are increasingly at risk of being compromised.
Numerous cryptographic technologies are used in the vehicle systems, and we are actively conducting research to apply PQC to these systems.
Additionally, in recent years, there has been an increase in thefts targeting high-end vehicles, often carried out using methods such as CAN Invader. To address this issue, we are also advancing the development of countermeasure technologies based on changes in the characteristics of communication cables and wire harnesses, as well as conducting research in digital forensics.



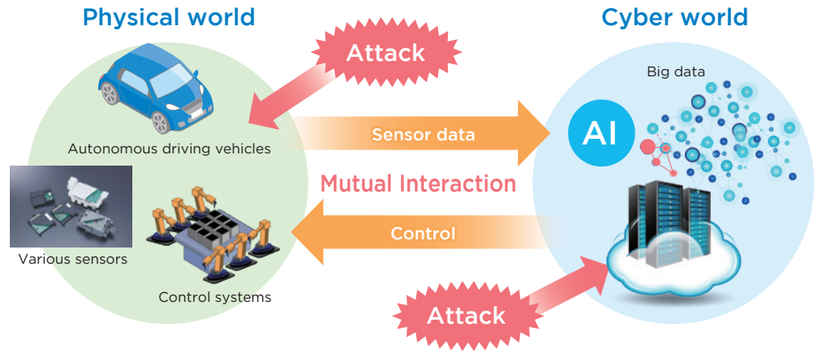
In-vehicle network anomaly detection

*ECU: Electronic Control Unit
*SDV: Software Defined Vehicle



Measures against vehicle theft using attack tools

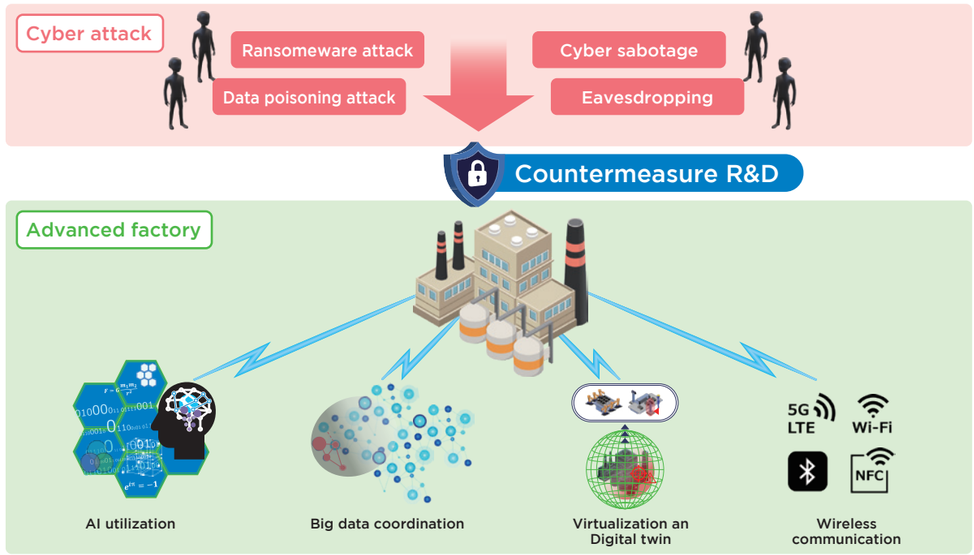
Due to the progress of the cyber and physical worlds integration, attacks on the cyber world will impact the physical world, and vice versa.
In order to mitigate the risk of these various cyber attacks, we are conducting research and development on cybersecurity countermeasures from both hardware and software perspectives.



Cyber-Physical system

Manufacturing Factory Security

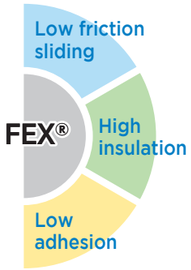
Manufacturing factories are required to introduce new technologies like AI utilization, big data coordination, virtualization and wireless communication, in order to adapt to various requirements such as labor-saving, efficiency improvements and flexible production.
To ensure cybersecurity in advanced manufacturing factories, we are researching future countermeasure technologies such as secure network architecture with dynamic zoning and intrusion detection against industrial robots.



Countermeasures against cyber threats in advanced factories

FEX Development Office

We develop materials for a cross-linked fluororesin named FEX®, which outperforms ordinary fluororesins in wear resistance and bonding, and enhance improve its coating accuracy and build up productivity.
Striving towards expanding applications for FEX®, we promote new product development as we work closely with different R&D and business units within the company. Industries such as the consumer, automotive and die-and-mold sectors are the target area of our current development applications for FEX® where FEX® can offer an outstanding performance.



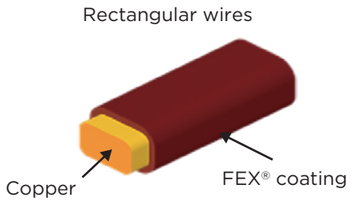
Low friction sliding	Improve performance of friction parts in dry or liquid lubrication
High insulation	Improve insulation performance of wires and rectangular wires
Low adhesion	Reduce foreign object adhered, improve better removal of molds for rubber/resin

Cross-linked fluororesin coating, tape and sheets

Carbon neutrality is a growing trend in the automobile and the consumer industries. Reflecting the trend, there is a growing need of sliding loss reduction. FEX®'s advantages such as low friction, wear resistance and burning resistance attract demand for products that reduce sliding loss. FEX® is also has excellent in water/oil repellency, non-adhesiveness and low friction. Such advantages are attractive in reducing foreign material adhesion and achieving better rubber/resin removal from molds and lower dust emission.Besides FEX® coating, we develop its tapes and sheets as well.

FEX® Tape

Low dielectric constant rectangular wire with fluororesin insulated coating



Structure of rectangular wire

As electromobility makes rapid progress, a highly insulated coating material able to withstand high voltage is required for magnet wires built in automobile drive motors. Since fluororesin is an excellent high insulation material with a minimal level of dielectric constant in solid, we conduct development of material and production engineering for FEX® to coat a magnet wire as an insulating layer for rectangular wires in driving motor for electrified vehicles.

R&D Planning & Administration Division

Aiming to carry out our long-term management plan (2030 VISION) that sets forth the managerial direction of our group company, we administer projects based on the achievements of our R&D unit. For the development and growth of our technologies and business areas, we support the launch of new research initiatives and commercialization of the results of our developments. We also promote collaboration within our group, joint research with universities and research institutions, participation in national projects, and cooperation with other companies. Regarding the US and Europe, we have set up local bases, where we gather the latest information, and encourage entry to development projects. Furthermore, we hold training workshops to nurture future leaders and networking between them.

Overseas Operations

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SEI Automotive Europe GmbH Innovation Core Department (ICS-Euro)

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SEI Automotive Europe
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TEL: +49-611-1677-1800

San Jose Office

Wiesbaden Office

ICS, which serves as the overseas R&D base of the Sumitomo Electric Group, has offices in the United States and Europe. ICS aims to be a source for Sumitomo Electric's innovation. By leveraging the advantages of these locations, ICS can quickly perceive dynamic changes in technology and market trends. By engaging in open collaboration with local partners while working closely with the laboratories in the Japan headquarters, ICS supports the development and commercialization of "energy", "mobility", "new materials" and "next-generation optical communication" technologies.

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The China Analysis Technology Center is located in Suzhou, east China, and provides analytical support for the production and development of our group in China.

The China Analysis Technology Center is located in the Sumitomo Electric Interconnect Products (Suzhou) Ltd. (SESZ) building.