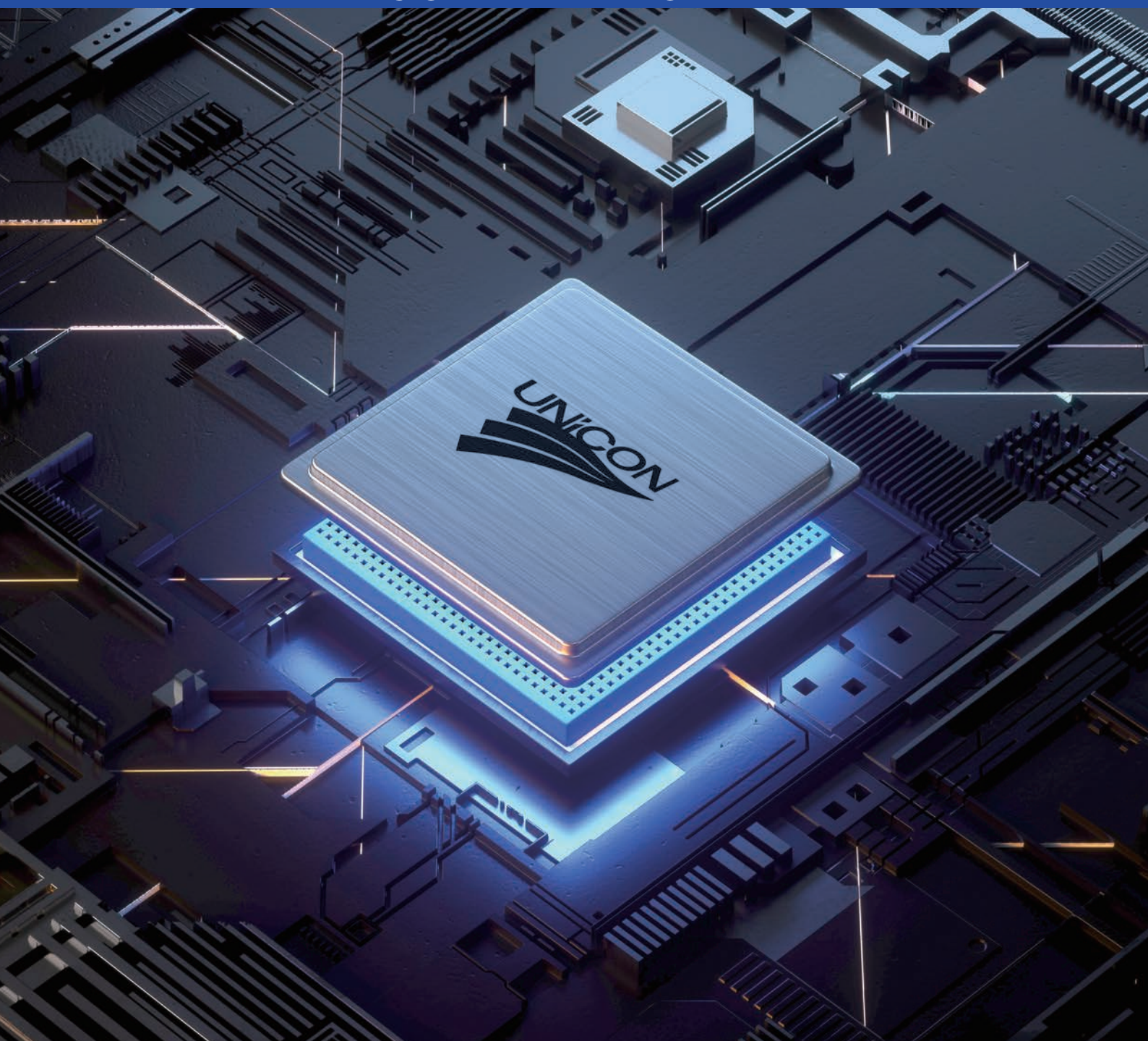


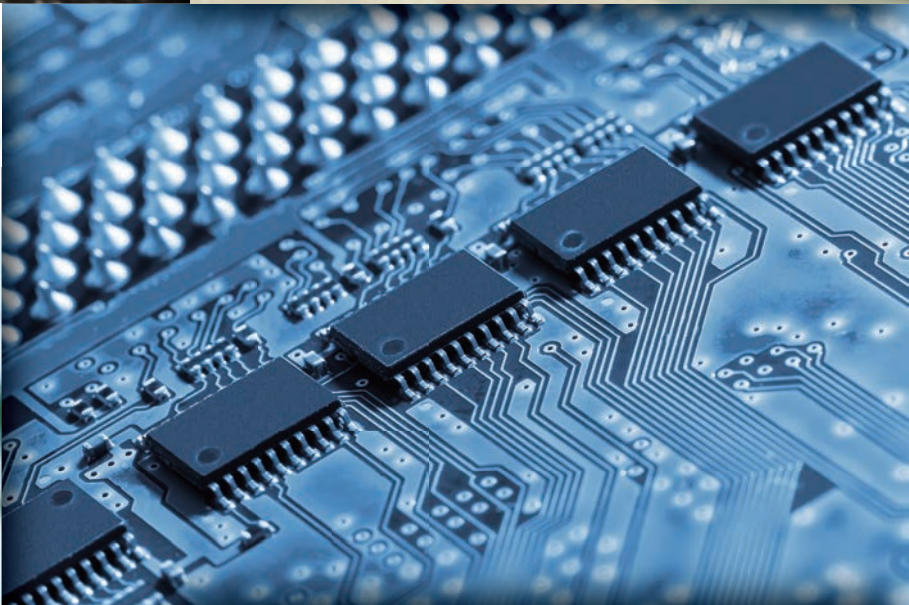
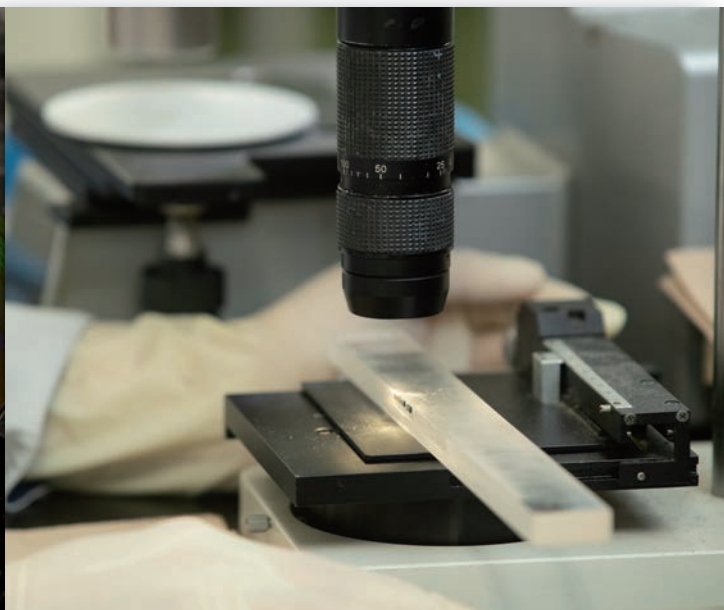
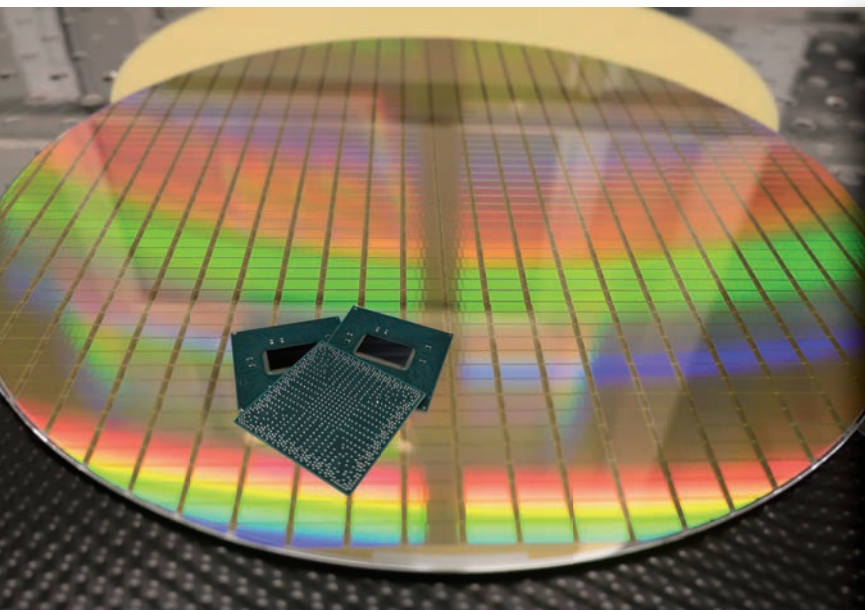


ISHIHARA CHEMICAL CO., LTD.

COMPANY PROFILE



Creating surface functions with society's future



in mind

MESSAGE

How will 5G cellular networks transform society?
What challenges will development and manufacturing sites face?
What is necessary to make the driving experience more convenient and comfortable?

Ishihara Chemical is a chemical manufacturer that creates functions for material surfaces while always keeping society's future in mind.

Surface chemistry is the study of chemical reactions at interfaces.

We have developed many products using surface chemistry technologies.

Furthermore, we have expanded into the science field by combining chemical with mechanical, electrical and other physical technologies.

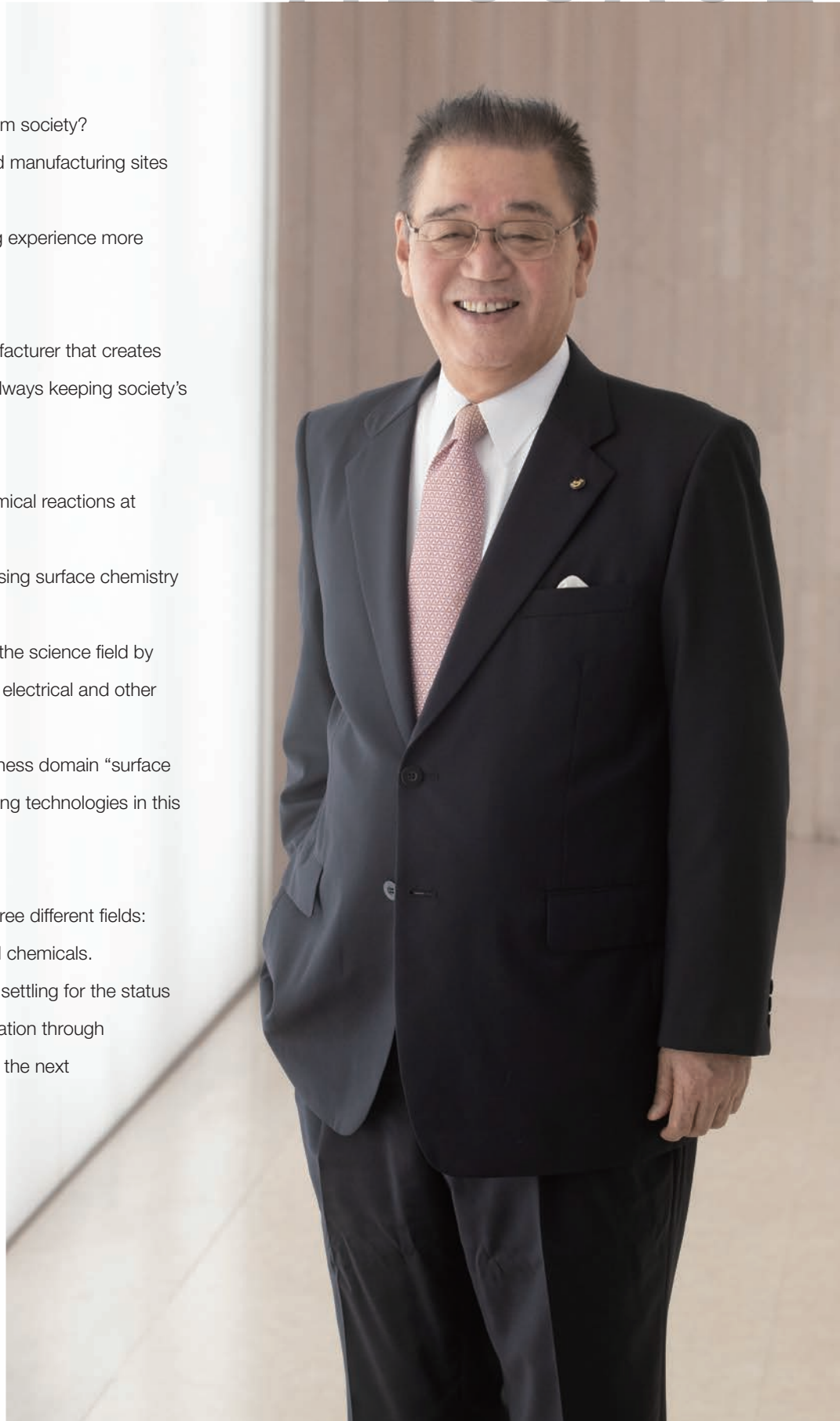
We call our unique technological business domain "surface science" and create new products using technologies in this area.

We currently run four businesses in three different fields: electronics, auto stores, and industrial chemicals.

We will contribute to society by never settling for the status quo while constantly striving for innovation through creating functions that are suitable for the next generation.

Yasuyuki Sakai,

President



A surface technology pioneer that builds a future

In the three types of development that shape the future, human resources play the key role in creating superior products and markets.

Since our founding in 1900, we have been constantly developing new technologies to meet each era's needs and shape the next generation in accordance with our corporate philosophy "the three types of development"; namely, self-development, product development and market development.

Indeed, the three types of development shape the future. We particularly focus on self-development by our employees. It is people that develop products and markets. We cannot make superior products without the trust of our customers, nor can we spread superior products without building the market's trust in us. True to our predecessors' belief that "people make a great company," we believe that each of our employees should take the initiative in achieving new development targets while remaining compliant with relevant laws and regulations. Our mission is to contribute to communities and society based on this principle.

HISTORY

1900

1900: Ishihara Eijudo founded.



UNICON polishing agent for musical instruments and furniture of the time

- 1939: Incorporated as Ishihara Eijudo Co., Ltd.
- 1946: Name changed to Ishihara Chemical, Co., Ltd.
- 1953: Developed liquid polishing agents and began the manufacture and sale of UNICON polishing agents for musical instruments and furniture.

1939



A scene from the time

- 1958: Opened a local office in Chiyoda ward, Tokyo (made a full branch in 1963).
- 1959: Began manufacture and sale of UNICON CAR CREAM, Japan's first cream polishing agent for automobiles.
- 1964: Began manufacture and sale of UNICON Tin Bright, glossy tin plating and glossy solder plating additive.
- 1966: Began manufacture and sale of automobile paint repair compound.

1958



UNICON CAR CREAM polishing agent for automobiles



UNICON Tin Bright glossy tin plating and glossy solder plating additive

1977

- 1977: Began sale of imported and processed MACOR[®] machinable ceramics.
- 1978: Manufacturing departments at the Head Office relocated to newly established Shiga Plant in Takashima City's Imazu-cho district, Shiga Prefecture.
- 1982: Automatic plating solution control device wins the Surface Finishing Society of Japan's Technology Award.

VISION

based on human resources.



Shiga Plant

2000: Celebrated the company's centenary.
 2002: Began manufacture and sale of automobile air-conditioner detergent.
 2003: Began manufacture and sale of wafer bumping plating solution.
 Acquired ISO 14001 certification.
 2004: Tokyo Branch relocated to Taito ward, Tokyo.
 2005: Opened the Shanghai Office in China.



Thailand Office



Kobe Plant

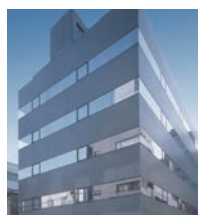
1991

2000

2019

1991: Listed in the Second Section of the Osaka Securities Exchange as a Specially Designated Brand.

1999: Began manufacture and sale of environmentally friendly lead-free solder plating solution.
 Acquired ISO 9001 certification.



Tokyo Branch



Second Section of the Tokyo Stock Exchange inclusion ceremony

2011: Listed in the Second Section of the Tokyo Stock Exchange.

2012: Opened the Thailand Office in Bangkok.

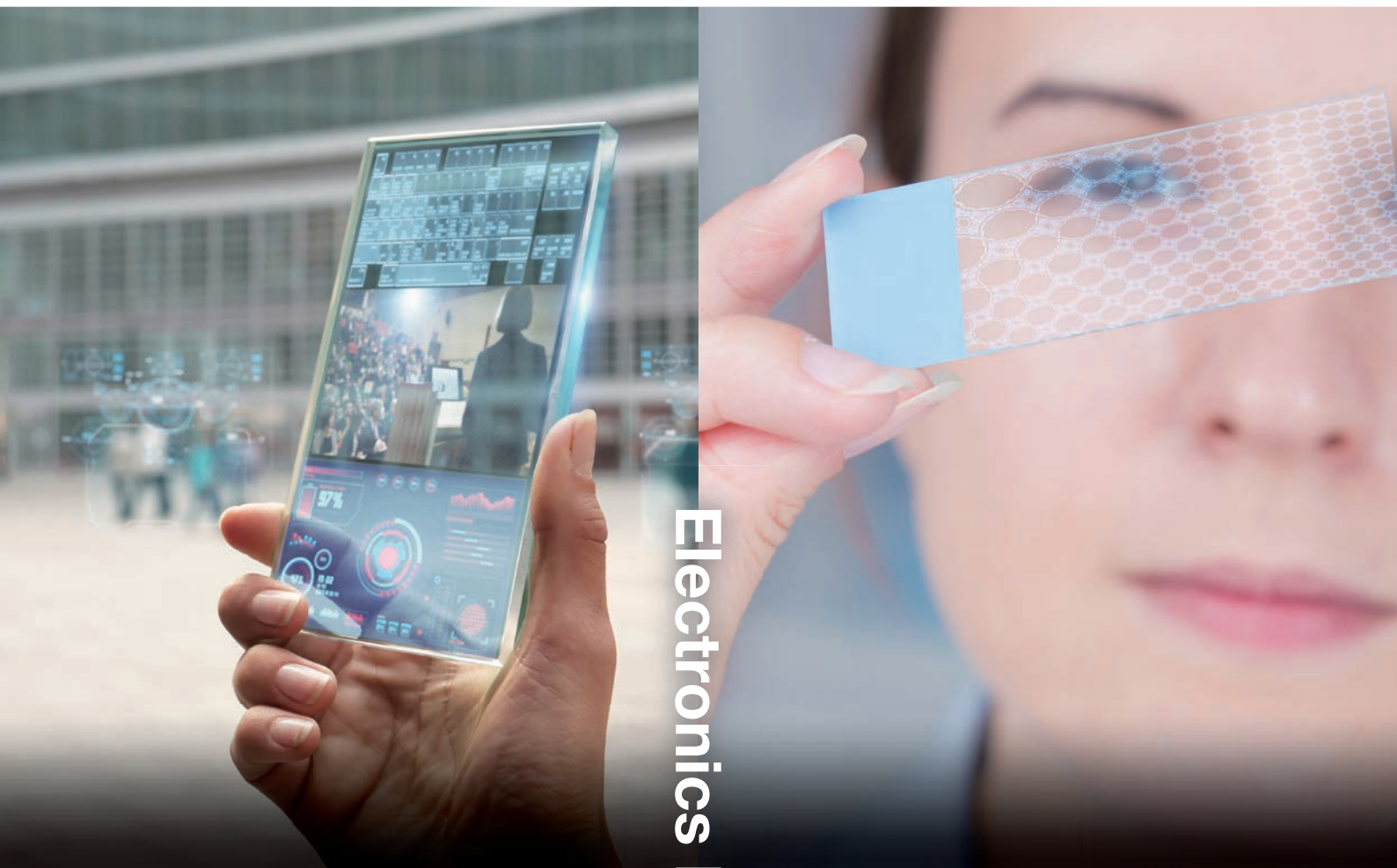
2013: Kobe Plant opened in Nishi ward, Kobe City.
 Name changed to Ishihara Chemical Co., Ltd.

2015: Established Ishihara Chemical (Shanghai) Co., Ltd., in Shanghai.

2018: Listed in the First Section of the Tokyo Stock Exchange.

2019: Rebuilt Factory No. 1 at the Shiga Plant.

Ishihara Chemical supplies a broad range of



Electronics Field

Metal Surface Treatment Agents and Equipment

●Metal Surface Treatment Agents

We conduct R&D on products that support cutting-edge components for electronics, which are growing smaller in size. We provide an array of products that meet the needs of the times, including environmentally friendly lead-free solder plating chemicals, wafer bump plating, and copper plating for electronic materials.

●Analysis Equipment

We develop, manufacture, and provide after-sales services for automatic chemical analysis equipment. This is used as analysis equipment for surface treatment solutions for the manufacturing of such high-functionality devices as printed circuit boards and smartphones.

Electronic Materials

●Metallic Nanoparticles

We promote research and development in the field of metallic nanoparticles, which are set to make significant contributions to the latest cutting-edge electronics fields, including electronic components found in smartphones, computers, and automobiles. We foresee a plethora of use applications in the advanced electronic materials market.

●Advanced Materials and Parts

We also procure, machine, and sell both machinable and engineering ceramics. Machinable ceramics are versatile ceramics which can be machined with ordinary metal-working tools. In addition, we offer a line-up of polyimide resins, plastics strengthened with carbon fiber, and composite parts.

surface technologies.

FIELD



Auto Stores Field



Industrial Chemicals Field

Automotive Chemicals

●Automotive Chemicals

We have developed our own "UNICON" brand of automotive chemical products for aftermarket use. We develop, manufacture, and market products that meet a wide variety of needs, particularly focused around products.

●Anti-Spatter Agents

UNICON NON-SPATTER is an agent that keeps the spatter, or molten iron drops, that is scattered during the electric welding process from adhering to the welded area. It is used by large manufacturers that deal in construction machinery, industrial machines, automobiles, and railway cars.

Industrial Chemicals

●Steel Field

We deal in a wide range of products, from agents used in manufacturing pig iron and steel, to agents used for rolling, surface processing, and wastewater and waste gas treatment. In addition to general industrial chemicals, we are introducing cost-efficient substitute products, such as imported products, and are playing an intermediary role in process outsourcing.

●Chemical Industry, Petrochemical Field

We work on polyvinyl chloride catalysts aimed at improving production efficiency, sulfuric acid catalysts, agents for treating industrial wastewater, and odor control countermeasures.

●Environmental and Public Projects Field

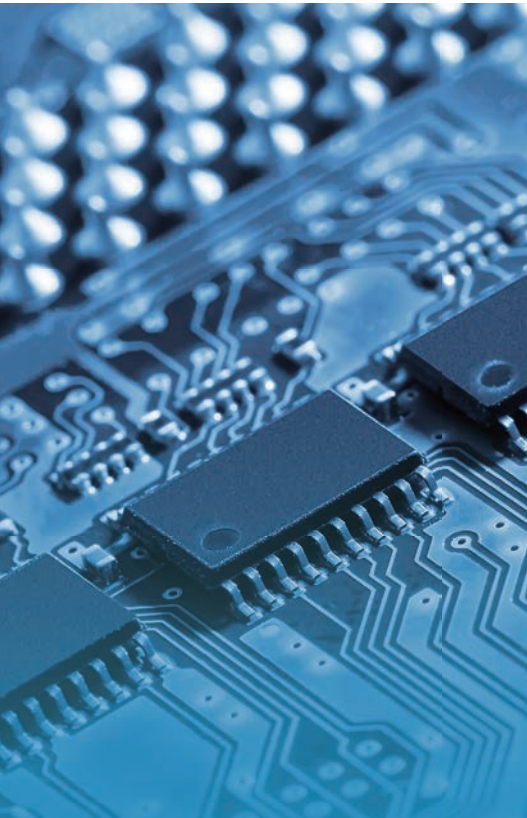
We sell chemicals such as water treatment agents for drinking water and sewage, and heavy metal scavenging agents. We also sell environmentally friendly microbiological agents, silver ion system treatment agents, and anti-scaling agents.

●Electronic Materials Field

We are cooperating on the development of battery materials, exploring materials that can be used in solar cells, and collaborating on the development of materials for industrial batteries. We are also supplying chemicals for use in these efforts.



Metal Surface Treatment Agents and Equipment



Plating solutions and analytical devices support production of electronic devices.

Of the many types of metal surface plating solutions, we develop, manufacture, and sell those for electrical components as our core products. Indeed, we have the top market share of lead-free tin or tin alloy plating, which is used to ensure PCB contact of semiconductors used in smartphones, computers, and audiovisual equipment.

Similarly, our highly rated wafer bump plating solutions have become indispensable in the production of ever slimmer and more highly functional smartphones and tablet computers. Meanwhile, we are striving to stay ahead of the functional evolution of semiconductors and PCBs by developing a range of new products such as electrolytic copper plating solutions for circuit formation.

Armed with unrivalled techniques and technologies in a niche market, we are uniquely positioned to provide customers not only with products but also with comprehensive solutions, including after-sale services aimed at ensuring our products provide ongoing quality and improved productivity.

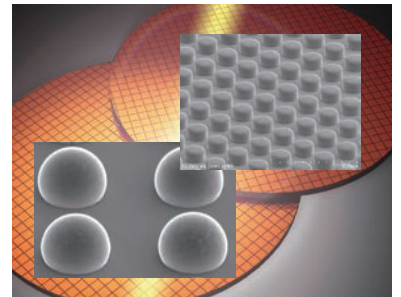
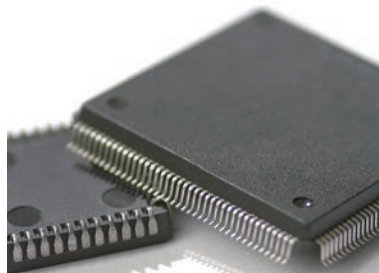
Automatic analysis equipment for chemicals regulates the concentration of solutions used in the manufacture of PCBs, smartphones, and other such highly functional devices. At Ishihara Chemical, we manufacture and sell this equipment as systems, and can provide solid after-sale service. We cater to a diverse range of customers who are able to reduce costs and maintain stable quality levels thanks to our consistent chemical concentrations.

We are the only TSE1-listed company able to offer such versatile surface treatment solution concentration control devices, and our track record of adapting flexibly to customers' and solution producers' development requests has earned us a solid reputation and dominant market share.

We foresee greater adoption of systems like these in the medical, food, agricultural, and environmental industries where the creation of production monitoring systems is making progress as AI and the Internet of Things automate the analysis and control of production lines, and as cloud-based systems become more common in the collection, storage, and analysis of data.

Major Products

- Lead-free solder plating solution
- Neutral tin plating solution
- Wafer bump plating solution
- Electroless plating solution
- Copper plating solution for wafers
- Copper plating solution for PCBs
- Automatic chemical analysis equipment





Electronic Materials



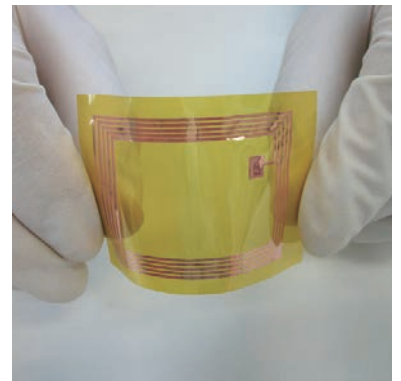
We supply highly-functional materials that are essential to state-of-the-art electronic devices.

Our R&D is focusing on the field of metallic nanoparticles, a new pillar of business for us. The technology surrounding metallic nanoparticles is revolutionary, and its applications are sure to grow in areas such as the electronic components used in smartphones, computers, and automotive systems, as well as LEDs, touch panels, and solar cell batteries. Practical applications will hopefully contribute to the advanced electronic materials market through more compact, higher-capacity components, simplified manufacturing processes, and lower costs.

At Ishihara Chemical, we are able to offer a broad array of unique functional materials. For example, when it comes to machinable ceramics, we stock MACOR® under a distribution arrangement with Corning Incorporated. MACOR® is known for its easy machinability, and can be machined swiftly and precisely to customers' specifications. It is used widely in semiconductors and medical applications to create prototypes, and is ideal for high-mix low-volume production.

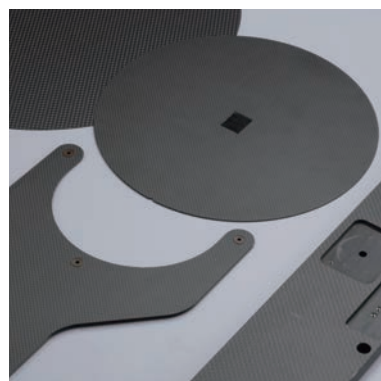
Similarly, in engineering plastics, we sell Vespel®, a polyimide resin, as an authorized distributor of DuPont™. Its high heat-resistance and electric insulation properties make Vespel® an irreplaceable material in semiconductor manufacturing and testing devices.

MACOR® is a registered trademark of Corning Incorporated and Corning NY. DuPont™ and Vespel® are trademarks or registered trademarks of E.I. DuPont de Nemours and Company in the US and its affiliates.



Major Products

- Metallic nanoparticles
- Machinable ceramics
- Engineering plastics





Automotive Chemicals



Our reliable UNICON auto supplies make drivers' lives more convenient and comfortable.

The famous UNICON brand was launched in 1953 as a polishing agent for musical instruments and furniture. A liquid car polishing agent, the first in Japan, was released the following year, since when we have developed an extensive range of aftermarket car care products.

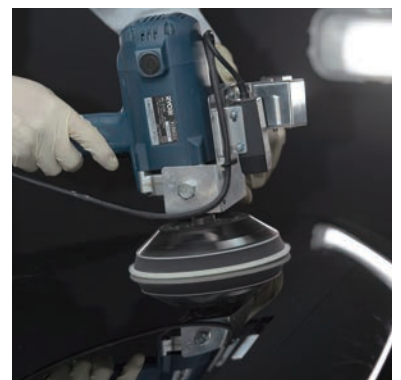
Today, our core product, an air conditioner cleaner, is loved by auto manufacturers and car dealers for its impeccable quality, and is stocked by an ever-increasing number of distributors. In this way, customers have come to know and trust our huge variety of professional-use products, including: detergents used by gas stations in their carwash facilities; car maintenance chemical products used by garages to assist with vehicle testing and certification work and improve profitability; body repair chemical products used by body shops, such as FMC POLISHING COMPOUNDS and ANTI-CHIP COATINGS; and environmentally friendly detergents for use in a variety of factories.

Another of our well-known product lines is anti-spatter agents (coatings applied to prevent spattering during electric welding and adhesion of spatter to surrounding areas). These products are go-to solutions for major players throughout the manufacturing industry, including shipbuilders, car makers, and even rolling stock manufacturers.



Major Products

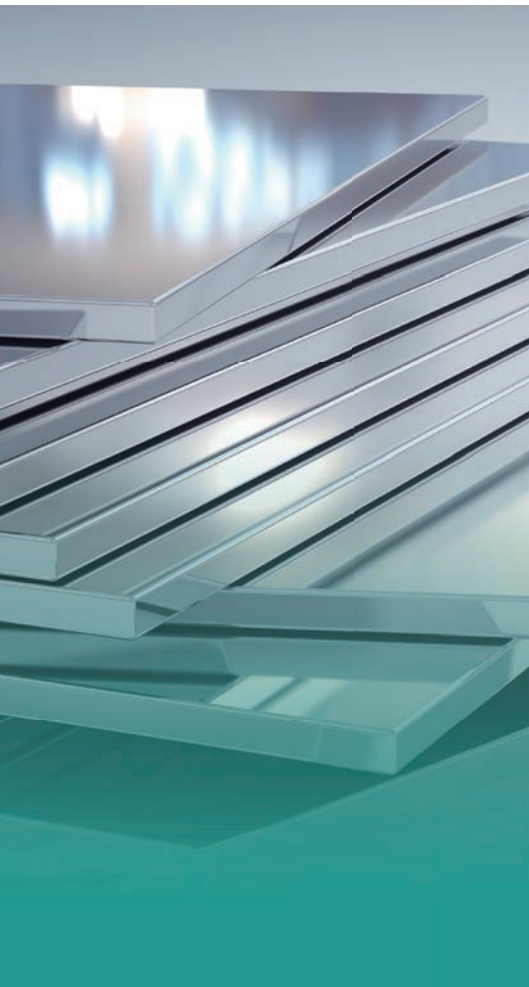
- Polishing agents
- Repair agents for auto paint
- Detergents
- Anti-odor and anti-bacterial agents
- Anti-spatter agents
- Anti-rust agents, lubricants



Industrial Chemicals Field



Industrial Chemicals



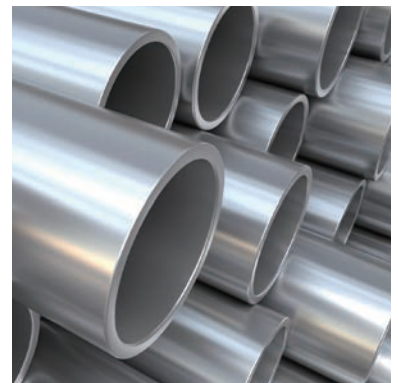
Major Products

- Acids, alkalis
- Photoresist and anti-reflective coatings
- Solid lubricants (for high temperatures, extreme pressure)
- Additives for surface treatments
- Rare earth metal compounds
- Chemicals for water treatment
- Catalysts

We solve customers' problems through the selling of solutions that use the knowledge and skills we have accumulated over the years.

With more than a century of experience since the company's founding in 1900, we have amassed a wealth of expertise in how to best serve the steel industry, other heavy industries, and even the chemical industry with fine chemicals and other highly specialized products—we even supply government agencies with chemical agents. Our typical products include surface treatment agents for steel plates used in both automotive and household furnishings applications. We also offer catalysts for PVC monomers in the chemical industry, special activated carbon for recovering solvents, and water treatment agents for drinking water and sewage.

While we serve mainly as a trading company wholesaling industrial chemicals to corporate customers, we have built up a wealth of knowledge and skill that far exceeds the normal purview of a mere trader. Indeed, our strength lies in the cohesion of our marketing and R&D departments, which enables us to identify customers' needs and find or develop solutions. Not only can we advise customers on the right chemicals for their purposes, we also play a coordinating role in proposing various chemical options, and using our metal surface treatment technologies and industrial material processing technologies to work with users on developing high-value-added products. Today, we are as devoted as ever to keeping abreast of industry demands and leveraging our unique skills and equipment to provide comprehensive support for customers, including everything from acquiring materials to suggesting and developing solutions.



We have ongoing R&D projects involving innovation to quickly realize customers' needs.



Ishihara Chemical is a research-oriented company with one-third of our employees working in the R&D division and around ten percent of our revenue invested in R&D activities. In addition, our R&D system has a solid base, including collaborative projects with universities and public research institutes to make further strides in the R&D area.

Therefore, one of our strengths lies in the ability to quickly respond to our customers' needs through close cooperation between the sales and R&D divisions. Products created with customers based on their challenges and feedback directly shared by them deliver not only high quality but also added value. Such products boost customer satisfaction and help us find inspiration for future R&D projects.

Meanwhile, we also focus on basic research. One of our ongoing projects in this field involves conductive copper nanoparticle ink as we are aiming to build our fifth business around this material. We are working to build this fifth business by furthering its practical application of this material. Achieving reliable manufacturing processes using this conductive ink requires the refined technologies that we have successfully accumulated over 100 years of R&D.

Our R&D Basic Policies

We develop:

- Products that meet customers' needs
- High-quality products with high added value
- Environmentally friendly products

innovative technologies

RESEARCH & DEVELOPMENT

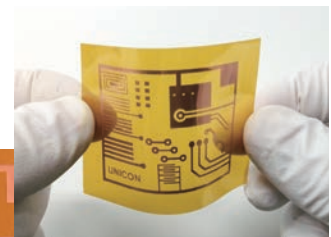
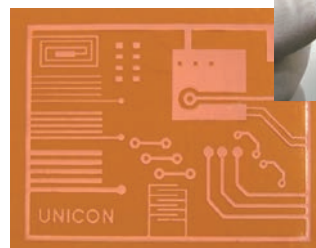


NEW PROJECT

Conductive Copper Nanoparticle Ink

Highly-conductive material as a printed electronics pioneer

As a pillar for the building of a new business, we are currently working to further the practical application of manufacturing processes for conductive copper nanoparticle ink after many years of research into the material. The technology of drawing electronic circuits with this ink allows printing on various materials, which can then be used as wiring or electrodes. Since this technology does not involve the traditional complicated process, it helps to reduce costs and energy significantly as well as being more environmentally friendly. Therefore, this is an innovative technology that will greatly transform the manufacturing process for each electronic component.



Ishihara Chemical aims to be on top of the world of surface technologies.



● Head Office

5-26 Nishi-yanagiwara-cho, Hyogo-ku, Kobe-shi, Hyogo 652-0806, Japan

TEL: +81-78-681-4801 / FAX: +81-78-651-6784



● Tokyo Branch

2-26-11 Taito, Taito-ku, Tokyo 110-0016, Japan

TEL: +81-3-3832-1531 / FAX: +81-3-3832-8132



● Shiga Plant

24-1 Kono, Kitaumi, Imazu-cho, Takashima-shi, Shiga 520-1642, Japan

TEL: +81-740-24-0151 / FAX: +81-740-24-0436

with the infinite possibilities



ISHIHARA CHEMICAL CO., LTD.

<https://www.unicon.co.jp>



Company Profile

- Company Name: ISHIHARA CHEMICAL CO., LTD.
- Founded: April 15, 1900
- Incorporated: March 3, 1939
- Capital: 1,980 million yen
- Executives: Motoichi Tokizawa, Chairman
Yasuyuki Sakai, President
- Stock Exchange: Tokyo Stock Exchange 1st Section
(Code: 4462)

Subsidiary

● KIZAI Corporation

9-10 Nihonbashi Kodenma-cho, Chuo-ku, Tokyo 103-0001, Japan
TEL: +81-3-3662-8871 / FAX: +81-3-3661-8636

● ISHIHARA CHEMICAL (SHANGHAI) CO., LTD.

Room 2604, The Place Tower B, 100 Zun Yi Road, Changning
District, Shanghai 200051, China
TEL: +86-21-6237-2150 / FAX: +86-21-6237-2151

Businesses

● Metal Surface Treatment Agents and Equipment

Tin/solder plating agents, automatic chemical analysis equipment

● Electronic Materials

Electronic materials, ceramics, engineering plastics

● Automotive Chemicals

Polishing agents, paint repair compounds, detergents, anti-odor and anti-bacterial agents, anti-spatter agents

● Industrial Chemicals

Acids, alkalis, catalysts, inorganic compounds

ISO 9001 certified

Registration No. JCQA-0543



ISO 14001 certified

Registration No. JCQA-E-0495



● Kobe Plant

1-6-2 Murotani, Nishi-ku, Kobe-shi, Hyogo 651-2241, Japan
TEL: +81-78-275-3031 / FAX: +81-78-275-3032



● Thailand Office

Ramaland Building, 18th Floor, 952, Rama IV Road, Bangrak,
Bangkok 10500, Thailand
TEL: +66-2-266-5616 / FAX: +66-2-266-5617

ISHIHARA CHEMICAL CO., LTD.