

## Chemicals

Most of the products of this division are comprised of industrial chemicals, such as ammonia and sulfuric acid, and derivative products/ high-purity products that have been developed downstream with added value. These products are supporting people's lives in a wide range of fields. By building an efficient production system, we strive to provide excellent products and technologies while reducing the environmental burden.

**OKIKAWA Toshiaki**  
Executive Officer  
Head of Chemicals Division



### Basic Chemicals

We sell industrial chemicals such as sulfuric acid, nitric acid, ammonia, and urea, and their derivative products to a wide variety of industries. The Company is further improving the efficiency of our production system in order to create a stronger business foundation to minimize the impact on our earnings due to external factors, such as changes in economic trends in Japan or overseas and fluctuating fuel prices.

We are also manufacturing and supplying products to support cutting-edge fields, and providing products to the market such as high-purity sulfuric acid, nitric acid, aqueous ammonia and liquid ammonia from which impurities are removed to utmost level.

In addition, we established a manufacturing and supply system for our high-grade urea solution AdBlue®\* that decomposes nitrogen oxide contained in exhaust gas from diesel vehicles, which is considered to be the cause of air pollution, into nitrogen and water, thereby reducing environmental impact.

\*AdBlue® is a registered trademark of the Verband der Automobilindustrie (VAD).

### Fine Chemicals

We offer environmental chemicals such as HI-LITE®, used for sterilization and disinfection of swimming pools and water purification tanks, and Venus® Oilclean, a microorganism formulation that decomposes oils and fats in wastewater from food factories, as well as other chemicals such as FINEOXOCOL®, higher alcohol used in products including cosmetics.

We have lineup of high-performance chemicals derived from isocyanuric acid, a derivative of urea, such as TEPIC® and Melamine Cyanurate. In addition to being used as a curative agent for coating powders, TEPIC® is seeing an increase in demand for use in electronic materials such as solder resist ink and sealants for LED. Melamine cyanurate is used as a non-halogen flame retardant or an auxiliary flame retardant for various engineering plastics. In addition to focusing on the expansion of applications for these existing products, we are promoting R&D of our own isocyanuric acid derivatives.

### Progress in FY2023

#### 1 Isocyanuric Acid

Isocyanuric acid is a material used in TEPIC®, HI-LITE®, and melamine cyanurate, which is used as a flame retardant. In order to facilitate the stable provision of TEPIC® and HI-LITE®, which are sources of growth of this division, to the market, we expanded our isocyanuric acid production facilities in December 2020, which contributed to an increase in sales.

#### 2 TEPIC®

The high-performance chemical TEPIC®, which has a distinctive triazine ring, is used in a wide range of applications. For electronic material applications, we expect that demand for TEPIC® will continue to grow in various fields, including the information & communication field (5G base stations for solder resist ink applications, substrates for autonomous driving, etc.). In FY2023, we fell short of our plans due to the increased competitiveness of competing Chinese products, but we forecast an increase in sales in FY2024. Sales prices of general-purpose grades were on a downward trend as international market conditions declined due to the economic slowdown in China, the largest market. We will pursue a well-balanced sales strategy by expanding sales of high-quality grades while avoiding low-price competition in general-purpose grades.

#### 3 HI-LITE®

"Clean Water and Sanitation," one of the SDGs, is an important global issue. We have exported some grades of HI-LITE® since they have been certified as materials for disinfectants for drinking water in areas where hygiene management is insufficient, such as in developing countries. We will respond to the global demand for disinfection, as well as the demand for disinfectant applications for drinking water.

#### 4 High-Purity Sulfuric Acid

Demand for high-purity sulfuric acid is expected to grow in the information & communications field, a business field which will continue to grow. In FY2023, demand began to improve in the second half, but fell short of our plan for the entire year due to production adjustments at semiconductor plants. In FY2024, we forecast demand to recover and shipments to increase. We will continue to maintain high quality and high availability.

## Business Strategies of Vista2027

### Opportunities and Risks

- Rising prices of raw materials and fuels
- Expansion of semiconductor market
- Increasing demand for environmentally friendly products
- Introduction of carbon pricing

### Strengths

- Manufacturing process for products with high self-extinguishing rates as well as high value-added products by developing derivative products using ammonia as a core raw material
- Accumulation of more than half a century of research and know-how regarding ultra-high purity of industrial chemicals

### Main Measures

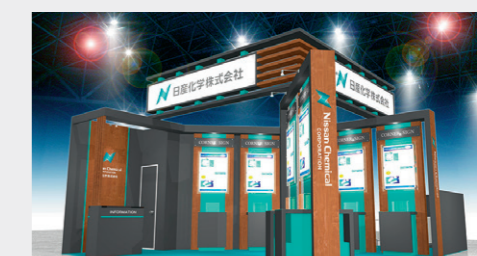
1. Improve profitability of ammonia-related business after the withdrawal from the melamine business
2. Expand sales of high purity sulfuric acid
3. Expand sales and improve profitability of isocyanuric acid, HI-LITE®, and TEPIC®
4. Develop the business of Venus® Oilclean (a microorganism formulation)

### Efforts to achieve Vista2027

In June 2022, the first year of Vista2027, we discontinued the production of melamine, which had been a core product in our ammonia-related products for more than half a century. Meanwhile, for sulfuric acid products, we will make capital investments and upgrade facilities in response to increasing demand. The Chemicals business is susceptible to the effects of fuel prices, supply demand balance, and market environment. Therefore, we will continue to strive to secure stable earnings while flexibly reviewing business strategies in response to environmental changes.

As a source of sustainable growth for the business, we will focus on the development and deployment of new products, mainly isocyanuric acid derivatives, while strengthening sales of products for the electronic materials field. We started the full-fledged commercialization of STARFINE® (zinc cyanurate), from which ef-

fects as an additive for paints and adhesives can be expected. Together with the new grades of TEPIC®, it has already been evaluated by many users for various purposes. We will also contribute to waste reduction with Venus® Oilclean, a microorganism formulation.



Exhibited STARFINE® at Converting Technology Exhibition 2024 (STARFINE®)

# Performance Materials

In this rapidly evolving business, it is necessary to quickly and accurately grasp the needs and technological trends of the market. For this, sales, research, and production, including overseas bases, are integrated, and we emphasize activities that are closely related to customers. We aim to contribute to the development of society by providing products and services based on the reliable technical capabilities that we have cultivated.

**ISHIKAWA Motoaki**  
Director, Senior Managing  
Executive Officer  
Head of Performance  
Materials Division



## Display Materials

We are working on alignment materials for aligning liquid crystal molecules in a certain direction. SUNEVER® was made available for sale in 1989, and we have expanded our market share by increasing the functionality of alignment materials, even when the liquid crystal type used is changed from TN to STN or TFT. In addition, in 2014, we started the sale of Rayalign®, a photo-alignment materials for IPS mode liquid crystal (LC) and this has become our main product. This product has been used in many smartphones, tablets and laptops. In the future, it is expected that product demand for Rayalign® will further increase as resolutions in monitor and automotive applications increase.

## Semiconductor Materials

We started the manufacture and sale of ARC®<sup>\*1</sup> in 1998 based on a licensing agreement with US company, Brewer Science, Inc. ARC® is a coating material designed to prevent issues such as irregular reflection and interference of light, and coating failure during micro-fabrication of the photoresist. We launched OptiStack®<sup>\*2</sup> (multi-layer process material) in 2007 which greatly expanded our business.

In 2018, EUV exposure technology (wavelength: 13.5 nm, semiconductor circuit width: 7 nm and under) was introduced into mass production and our products are applied to resist under layers materials for EUV. We are currently promoting high-quality improvements in the mass production and next-generation development of EUV materials, and also focusing on three-dimensional packaging technology preparing for the limits of optical shrink.

\*1, 2 ARC® and OptiStack® are registered trademarks of Brewer Science, Inc.

## Inorganic Materials

SNOWTEX®, a nano silica water dispersion serving as a fiber processing agent, went on sale in 1951. Now we also offer organosilicasol serving as an organic solvent dispersion, and monomer sol, a product that can be used without solvent. These products are indispensable materials used in coating materials for optical films and in abrasives for electronic substrate materials and for other purposes. In the future, we will work on the development of CCS/CCUS-related materials and expand their applications to new eco-friendly products.

## Progress in FY2023

### 1 Liquid Crystal Alignment Materials for TVs

Currently, our major materials for displays are alignment materials for smartphones and tablets, and especially the photo-alignment material for IPS LCDs. In the future, we will also use them for TVs. Although demand for LCD TVs is predicted to decrease somewhat, we predict that demand for alignment materials will continue to increase based on screen sizes. Also, since we believe that screen resolutions will continue to improve, we recognize that it is an important theme to accurately respond to technical requests from customers and expand the market share of our products. In FY2023, sales of alignment materials for VA LCDs, which expand our market share in the previous year, increased by 20% due in part to increased production by major customers.

### 2 Strengthening Development Capabilities and Establishment of a Structure to Increase Production for Semiconductor Materials

We strengthened the development capabilities in EUV materials for cutting-edge applications. We also focused our efforts on increasing the quality of current EUV materials and developing the next-generation versions. Moreover, in order to increase the speed of development for South Korea market, we established the new Semiconductors Division of R&D center at NCK (April 1, 2023). And also in order to respond to future market growth in demand, the 3rd NCK BARC plant in Dangjin, South Korea was completed in May 2023 and is currently under evaluation for approval by customers.



### 3 Material Development toward Achieving Carbon Neutrality

We are working to develop a variety of materials toward achieving carbon neutrality. Progress was made in the development of water shut-off agent for crude oil drilling, CCS and CCUS materials, and materials for EV motors.

## Business Strategies of Vista2027

### Opportunities and Risks

- Expansion of application of photo-alignment material for IPS mode LC and growth of the OLED market
- Expansion of the semiconductor market and progress in 3D packaging technology
- Development of a smart society
- Intensification of inter-corporate competitions

### Strengths

- A sales and research system closely linked to customers in China, Taiwan, and South Korea
- Optical control technology
- Functional polymer design technology
- Ultrafine particle control technology

### Main Measures

1. Improve existing products and expand their application
2. Reinforce and increase manufacturing facilities and other facilities
3. Develop and launch new products
4. Start the commercial operation of the new NCK plant
5. Improve profitability of the inorganic material (inorganic colloid) business

### Efforts to achieve Vista2027

#### Next-Generation Display Materials

OLEDs, which are thinner, lighter, and have faster response times than LCDs, and provide added value such as foldability, are increasingly being used in smartphones premium TVs and other products. Recently, following OLED, next-generation self-luminous displays incorporating technologies of quantum dot (QD) and LED, which promise higher image quality, have been actively developed. We will aim to commercialize new products by developing proprietary materials, such as optical control materials, functional film materials, and QD-related materials.

#### Semiconductor Packaging Materials

Technologies related to high-speed, large-capacity information and communication such as IoT, 5G, and sensors, are making rapid progress. For this reason, further miniaturization and higher integration in the formation of electronic circuits are occurring. As we have been working on the development of materials for the process of 3D packaging with thinned semiconductor wafers, we plan to expand sales the materials in the growing market.

# Agricultural Chemicals

We contribute to a stable food supply through consistent business activities from the research for new agricultural chemicals to their development, manufacture, and sales, and expansion of a broad product lineup through the acquisition of ingredients from other companies and joint development of products.



**SATO Yuji**  
Senior Managing Executive Officer  
Head of Agricultural Chemicals Division

### Agrochemicals

Our agrochemical business started in the 1910s when our predecessors Nippon Seimi Seizo and Kanto Soda began manufacturing and selling insecticides and fungicides. Starting with TARGA® (herbicide for grassy weeds) launched in 1984, we have continued to manufacture and sell products developed in-house such as SIRIUS® (herbicide for paddy rice), SANMITE® (insecticide/acaricide) and PERMIT® (herbicide for paddy rice and corn), which have steadily improved profitability.

Afterwards, we experienced hard times as a result of in-house development delays and intensifying competition with competitors. However, since the launch of LEIMAY® (fungicide) in 2008, we have returned to introducing products developed in-house, and started sale of STARMITE® (acaricides) in 2009, ALTAIR® (paddy rice herbicide) in 2012, and GRACIA® (general purpose pesticide) in 2018. In addition, we are actively pursuing the acquisition of other companies' agents and have enhanced our agricultural chemical product portfolio by taking over the global product Quintec® (fungicide) in 2019 and Japanese and Korean operations for the versatile DITHANE® (fungicide) in 2020.

### Veterinary Pharmaceuticals

Through our development of agricultural pesticides, we have discovered compounds that are not only effective for use on agricultural crop pests, but also on fleas and ticks that are parasitic in dogs and cats, and have continued to examine these compounds as veterinary pharmaceuticals. In 2008, we entered a licensing agreement with Intervet Inc. Development of veterinary pharmaceuticals using Fluralaner, a compound invented by us, as an active ingredient has advanced.

Since launched in Europe and the United States under the brand name BRAVECTO®\* in 2014, veterinary pharmaceuticals containing Fluralaner as an active ingredient are now used in more than 100 countries and are leading the growth of Agricultural Chemicals Division. In addition to our products for dogs and cats, EXZOLT®\* for chickens, cattle, and sheep is also obtaining a marketing authorization in an increasing number of countries.

\* BRAVECTO® and EXZOLT® are registered trademarks of Intervet International B.V., a subsidiary of Merck & Co., Inc.



### Progress in FY2023

#### 1 GRACIA®

GRACIA®, a pesticide developed in-house, is fast-acting on a wide range of crop pests and has little impact on honeybees which are useful insects. It was released in South Korea in 2018 and went on sale in Japan in May 2019. The product has been launched in Indonesia, India, Vietnam, and Middle East countries since 2021, and will be launched in other countries in the future.



#### 2 ROUNDUP®

In addition to the ROUND NOZZLE® ULV5, which enables labor-saving spraying of ROUNDUP® MAX LOAD, for backpack and boom sprayers, we launched the ULV5 for Hokkaido and the coverless ULV5-Light in 2023. We are increasing sales of Roundup® Max Load while responding to the needs of producers. Sales of ROUNDUP® MAXLOAD AL for general consumers are expected to increase due to continued acquisition of new users and expansion of retail distribution.

#### 3 Fluralaner

Veterinary pharmaceuticals for companion animals and livestock containing Fluralaner as an active ingredient are available in more than 100 countries. In FY2023, sales of animal health products containing Fluralaner as an active pharmaceutical ingredient continued to increase year on year, mainly for companion animals. Along with the low birthrate and aging population, the idea that companion animals are like a family to their owners is growing in popularity. We expect that the demand for veterinary pharmaceuticals will increase in the future as people become more aware about companion animal health.

### Business Strategies of Vista2027

#### Opportunities and Risks

- Labor shortage due to the population decline in Japan
- Growing need for measures to increase food production due to the increase in global population
- Growth of bio-based agrochemicals and materials
- Expansion of market for companion animals

#### Strengths

- Ability to create distinctive, new agrochemicals from the core technologies of fine organic synthesis and biological evaluation
- Experiences and track records spanning many years from research for new agricultural chemicals to manufacturing and sales
- High level of motivation cultivated through maintaining high profit margins and continuous growth

#### Main Measures

1. Popularize and expand sales of main products such as GRACIAR, and continue to enhance our respective marketing efforts for large-scale producers and agricultural corporations, and general consumers
2. Conduct steady development of VELDER® (novel herbicide), NC-656 (novel herbicide) and NC-520 (novel nursery-box insecticide for paddy rice), and create new pipelines
3. Promote bio-research

#### Efforts to achieve Vista2027

In order to enhance our product portfolio, we will continue to introduce and jointly develop products from other companies, including biological agrochemicals.

In addition, as in-house developed products, following the development of a herbicide for paddy rice flooding treatment (VELDER®), we also have begun development of a herbicide for application on stems and leaves of paddy rice (development code NC-656) and a nursery-box insecticide for paddy rice (development code NC-520). Moreover, we have established a joint venture (Nissan Bharat Rasayan PVT. LTD.) in India for the purpose of manufacturing the active ingredients in agrochemicals. It started commercial operation in March 2023. By having this joint venture's manufacturing plant together with the Onoda Plant, we can respond to growing demand for our agrochemicals. We expect it will contribute to the growth of our agrochem-

icals business by establishing a robust active production and supply system that is cost-competitive.



# Healthcare

In order to appropriately respond to changes in the business environment and achieve mid- to long-term growth, we are accelerating the selection and concentration of business areas. In addition, we contribute to the resolution of health issues by developing and launching new pharmaceuticals, generic drugs and medical materials based on our unique technologies.

**ISHIWATA Norihisa**  
Executive Officer  
Head of Healthcare Division



### Healthcare

In the 1970s, a number of companies from other industries entered the pharmaceutical business. We focused our research and development on lifestyle-related diseases and launched efonidipine hydrochloride, an antihypertensive drug, in 1994. It is distributed in Japan by Zeria Pharmaceutical and Shionogi as LANDEL<sup>®1</sup>, and in South Korea by GC Biopharma as FINTE<sup>®</sup>tab.

In 2003, Kowa Company launched the anti-cholesterol drug pitavastatin calcium hydrate as LIVALO<sup>®2</sup>, which is currently sold in over 30 countries around the world. After its substance patent for Japan expired in 2013, due to the decline in market share by generic drugs and the impact of drug price revisions, the domestic conditions continue to be harsh. The creation of new drugs is an urgent issue for us.

With the organizational restructuring in April 2022, the drug discovery research function was transferred to the Planning and Development Division, where it is handled by the Healthcare Business Development Department. The Healthcare Division is taking charge from the out-licensing stage, developing the business from a comprehensive perspective of broader healthcare together with medical materials.

### Custom Chemicals

We operate a "solution proposal" contract business and a joint development business that provide total support for the development of active pharmaceutical ingredients (APIs) in response to customer needs. We accept contracts for the development of manufacturing processes at each stage from preclinical to commercial production and for the manufacture of active pharmaceutical ingredients (APIs) and intermediates under cGMP-compliant conditions, as well as for the associated quality design, stability testing, synthesis of impurity/metabolite samples, and preparation of application materials for the drug master file.

Recently, we have expanded our business of supplying APIs for generic drugs, and are not only handling highly active APIs that require containment, but also efficiently manufacturing highly active vitamin D3 APIs in addition to prostaglandin derivatives using our proprietary two-component coupling method based on our diverse fine organic synthesis technologies. In addition, we have developed our proprietary liquid-phase synthesis technology SYNCNSOL<sup>®</sup> for innovative contract peptide production.

<sup>1</sup> LANDEL<sup>®</sup> is a registered trademark of Zeria Pharmaceutical Co., Ltd.  
<sup>2</sup> LIVALO<sup>®</sup> is a registered trademark of Kowa Company, Ltd.



### Progress in FY2023

#### 1 Construction of Basic Technologies to Accelerate Oligonucleotide Drug Discovery and Promotion of Joint Drug Discovery with Pharmaceutical Companies

Oligonucleotide therapeutics are attracting attention in their main roles as next-generation pharmaceuticals. In addition to accelerating our research by strengthening our unique technologies in oligonucleotide drug discovery, we have been jointly working with multiple pharmaceutical companies to create development compounds since 2019 and expanding these partnerships.

#### 2 Establishment of an Efficient Peptide Manufacturing Technology and its Commercialization

In 2018, we invested in PeptiStar, which is aiming to establish a stable supply system for APIs of constrained peptides. Meanwhile, we have developed a novel liquid phase peptide synthesis technology (SYNCNSOL<sup>®</sup>) that enables dramatic cost reduction. We are currently developing new generic APIs by making full use of this technology. In the future, we intend to develop this technology for not only APIs but also peripheral medical materials.



#### 3 Continuous Launch and Market Expansion of Highly Bioactive Generic Drugs

The containment facility for development have been put into operation, and technology cooperate agreements with partner company have been signed to accelerate new development following prostaglandin (limaprost) and active vitamin D3 (maxacalcitol and eldecalcitol). In the future, we will develop a stable supply system and nurture it as a source of growth, with a view to expanding into overseas markets in addition to the domestic market.

### Business Strategies of Vista2027

#### Opportunities and Risks

- Increasing demand for generic drugs
- Expanded efforts in middle molecule drug development
- Aging population and diversification of healthcare
- Intensification of inter-corporate competitions

#### Strengths

- Fine organic synthesis technology
- GMP compliant high-level containment technology
- Chemistry, Manufacturing, and Controls (CMC) support for APIs
- Cutting-edge evaluation functions

#### Main Measures

1. Healthcare: Focused investment in the oligonucleotide drug discovery, commercialize and expand sales of medical materials (biointerface control materials, cell culture materials)
2. Custom Chemicals: Strengthen highly profitable business models, expand into overseas markets, and aim for joint development (peptides, etc.)

#### Efforts to achieve Vista2027

We will focus on oligonucleotide therapeutics utilizing our proprietary basic technology for oligonucleotide drug discovery and steadily promote joint drug discovery platform with pharmaceutical companies. In the area of small molecule drugs, we will work on the use of AI as a shift from existing drug discovery method. The API of LIVALO<sup>®</sup> will be developed by taking advantage of economies of scale. As for medical materials, we will commercialization and sales expansion of new products, such as biointerface control materials and cell culture materials. In addition to the generic drug maxacalcitol, which was launched in FY2015, eldecalcitol, which was launched in FY2020, has achieved significant growth as a pillar of our business. In the future, we will accelerate the development of new

generic drug APIs which leverage our strength, and be fully engaged in business not only in Japan but also in overseas markets. Furthermore, leveraging the overwhelming technological superiority of our proprietary liquid-phase synthesis technology "SYNCNSOL<sup>®</sup>," we will develop the peptide contracted business and the joint-development business. Through these measures, we will further develop Custom Chemicals into a highly profitable business.

It will take time to obtain results for new pharmaceuticals and medical materials. Until then, we will continue to boldly take on the challenge of developing new pharmaceuticals and medical materials while supporting the backbone with our highly profitable Custom Chemicals business.

# Planning and Development Division

By combining our core technologies with new materials and technologies, we are striving to create new products and businesses with high added value that meet the needs of society. In order to further accelerate development, we established the Planning and Development Division in FY2020 and through the establishment of new groups, we are now developing products in a wide range of fields, including information & communications, environment & energy, human healthcare, and animal care.

**ENDO Hideyuki**  
Managing Executive Officer CTO  
Head of Planning and Development Division



### Healthcare

We carry out drug discovery, mainly oligonucleotide therapeutics, and development for commercialization of materials for regenerative medicine and raw materials for cosmetics.

In the drug discovery, we are focusing on oligonucleotide therapeutics. In order to contribute to improving patients' quality of life through the creation of innovative new drugs, we are strengthening our platform through collaboration with academia and our partner companies and building our robust R&D portfolio through alliances with pharmaceutical companies.

In the field of regenerative medicine, as well as starting investigator-initiated clinical research using Cellhesion®, a scaffold that enables 3D mass culture of undifferentiated mesenchymal stem cells said to be highly safe, we started paid shipments of Advance-CR, a material for non-frozen transportation and storage of cell clumps (spheroids). In addition, prevelex®, an agent to prevent adhesion of proteins and cells, etc. to containers has contributed significantly to the start of clinical trials at partner companies. We will continue to aim for applications in the containers for test and research, fields of gene medicines and antibody pharmaceuticals.

In the cosmetics field, in addition to the increased use of NFG® in skin care products by cosmetics manufacturers, its use in hair care products has increased significantly due to its hair damage repair function attracting attention, and we are working to further expand its use in these products.

### Information & Communication

We are working on the development of new materials that support cutting-edge devices required to realize Society 5.0.

We are promoting market development for materials including μLED-related materials attracting attention as next-generation displays with high brightness and high reliability, wafer-level package-related materials that enable miniaturization and thinness, SUNCONNECT®, an optical interconnect material that support high-speed, large-capacity data communications, and liquid metal-based thermal interface material developed by Arieca Inc.

### Environment & Energy

We are committed to product development that contributes to the realization of a sustainable society through Green Transformation (GX).

In the field of lithium-ion batteries (LIB), we are developing slurry additives with the aim of improving input/output characteristics, extending service life, and increasing productivity, and are working to commercialize them as soon as possible. We are developing materials for catalyst layers in polymer electrolyte fuel cells and ammonia electrolyte synthesis catalysts for utilizing hydrogen energy, as well as charge transport materials that contribute to improve the efficiency of lightweight flexible solar cells.

Toward the realization of a recycling-oriented society, we are working toward the early commercialization of ECOPROMOTE®, a resin additive that contributes to cost reduction in the molding process and improving a heat-resisting property of polylactic acid, which is rapidly becoming popular as a biodegradable bioplastic.

### Animal Care

We are working on planning and development for commercialization in the field of veterinary pharmaceuticals. We are planning and developing veterinary drugs using the R&D technology of small molecule drugs cultivated by Nissan Chemical over many years, and formulating strategies for establishing a sales and distribution system for veterinary drugs in Japan.

### New Material Planning and Research Management

Through venture capital based investment and other means, we are working to discover high-quality start-up companies and new development themes. We are working at the revitalization of development themes by introducing new materials and technologies in each field and accelerate commercialization by strategically investing in startup companies.

In addition, we are working on enhancement of R&D capabilities through training of researchers and support of R&D themes, and are working on evolution of existing technologies and creation of new technologies.

## Progress in FY2023

### 1 Oligonucleotide drug discovery

Since March 2019, Nissan Chemical and Sanwa Kagaku Kenkyusho Co., Ltd. have been conducting drug discovery research to identify potential novel oligonucleotide therapeutics. And we have already discovered a preclinical antisense candidate for a rare disease. Considering this achievement, we expand into the strategic collaboration to advance next-generation oligonucleotide therapeutics programs and aim to discover and develop new oligonucleotide therapeutics candidates.

### 2 SUNCONNECT®

SUNCONNECT®, an optical interconnect material with high heat resistance and low optical loss, has been evaluated by customer companies as a material for polymer optical waveguides, and its paid sales have already started. For opto-electronic hybrid technology, which is expected to see further development in the future, we will widely deploy this material, mainly to semiconductor package substrate manufacturers in Japan and overseas.

### 3 LIBSOLVER™

Lithium-ion batteries (LIBs) for electric vehicles (EVs) are required to have high capacity to extend the cruising range, and we are working on the development of materials "LIBSOLVER™" used for high capacity LIBs. In addition to improving the characteristics of the LIBs, this material also makes a significant contribution to improving manufacturing stability.

## Business Strategies of Vista2027

### Opportunities and Risks

- Expansion of regenerative medicine market, growth of beauty and health market
- Development of digital society and expansion of ICT market
- Increasing demand for technological development aimed at the realization of a low-carbon society
- Development delays and late arrival of expected new fields

### Strengths

- Design of small molecule and polymer and its functionalization, formulation capability and biological evaluation technology
- Thin film coating based interface control technology
- Networking with external research institutions across multiple disciplines



### Main Measures

1. Acceleration of development by allocating resources to important themes
2. Incorporation of new technologies and materials from inside and outside the Company and their incorporation into in-house technology
3. Improvement of contact with customers and strengthening of solution proposals capability