

# Intellectual Property Report



April 2014 to March 2015

**КАПЕКА**

# Contents

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## Introduction

1. Core Competencies and Business Model .....	3
2. Strategic Fields of Emphasis and Business Strategy Direction .....	3
3. Strategic Fields of Emphasis and Overview of Intellectual Property .....	4
4. Analysis of Marketability of Technologies and Dominance in Markets .....	5
5. Research and Development-Intellectual Property Relational Diagram; Research and Development Cooperation and Affiliation .....	6
6. Policies Concerning Acquisition and Control of Intellectual Property, Control of Trade Secrets, and Prevention of Technology Leaks .....	7
7. Contribution of License-Related Activities to Operations .....	7
8. Contribution of Patent Groups to Operations .....	8
9. Intellectual Property Portfolio Policies .....	9
10. Information on Handling Risks (Current State of Exercise of Rights) ...	10~11

## Introduction

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I offer my greetings with the issue of KANEKA Group's *Intellectual Property Report 2015*.

KANEKA Group has formulated a long-term management vision, "DECLARATION OF KANEKA UNITED for the Future," which aims to achieve a sales total of one trillion yen and a 70% increase in overseas sales by 2020.

The global economy is in the midst of massive upheavals due to factors of variability such as excessive fluctuations in the exchange rate and collapse in oil prices. Japan's economy continues to head toward recovery in some areas, due to positive factors such as the effects of Abenomics, Tokyo's successful bid for the Olympic Games, and an increase in the number of foreign tourists visiting Japan, but there are also factors with a risk of having a negative impact on the economy, such as prolonged sluggishness in personal consumption resulting from consumer price increases, caused by an increased consumption tax and a weakened yen.

We believe that the key elements for realizing the "DECLARATION OF KANEKA UNITED for the Future" in such a changing economic environment are "innovative changes" and "growth." We also believe that the most important challenge for KANEKA Group is to put our business on a growth trajectory by pursuing innovative changes in our business configurations, through the acceleration of globalization and the strengthening of our R&D.

In addition, intellectual property, which is one of the driving forces in the pursuit of "innovative changes" and "growth," is very important for KANEKA Group.

Concerning the aspect of intellectual property, we will continue to implement management strategies that unite business strategies, research and development strategies and intellectual property strategies, and to pursue strategic and global creation, protection, and utilization of intellectual property based on intellectual property portfolio management.

We hope that the *Intellectual Property Report 2015* serves to deepen your understanding of our intellectual property-backed management and activities.

September 2015  
Mamoru Kadokura, President



Farseeing and collaboratively value-creating group  
(Dreamology Company)

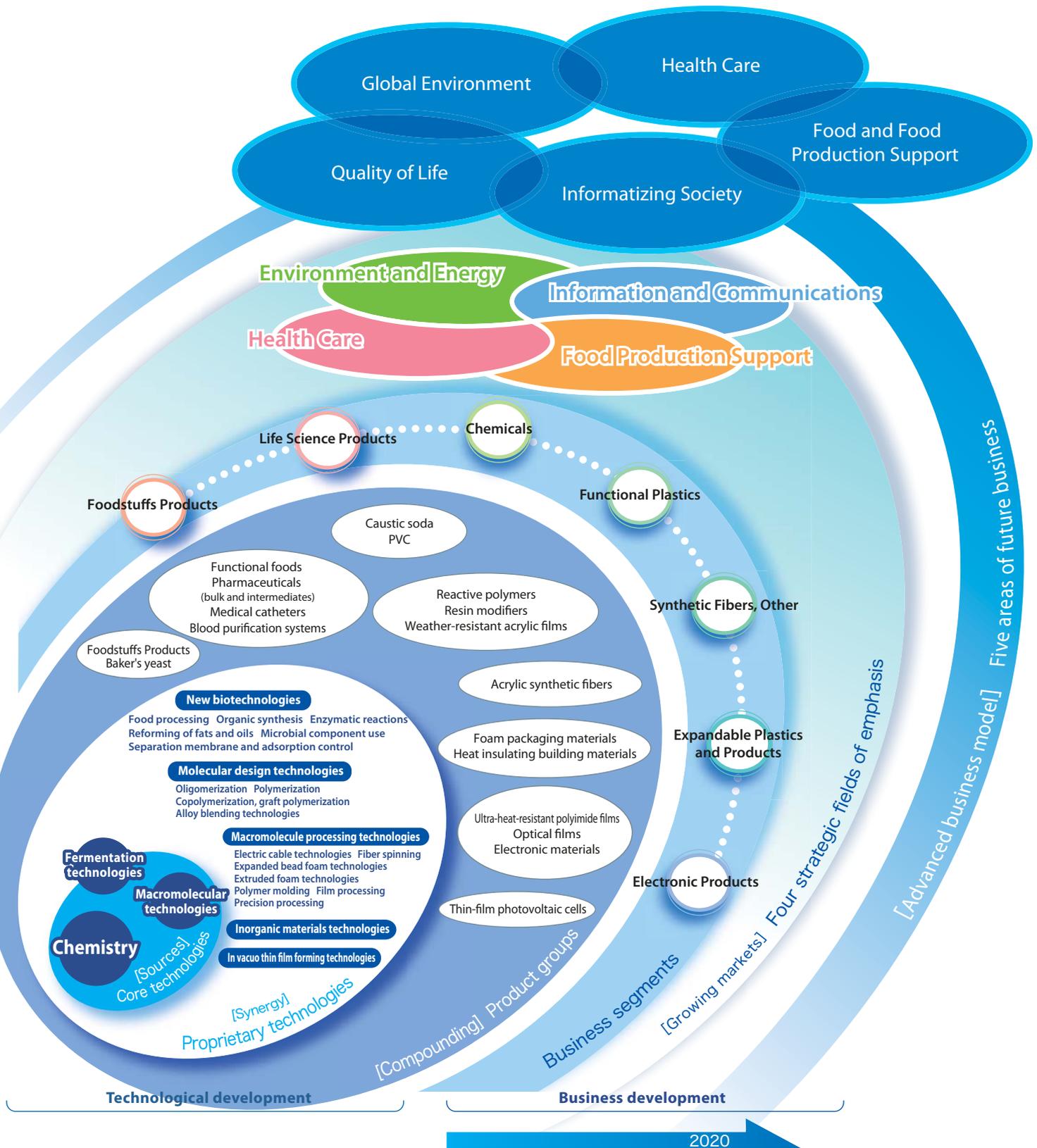


Fig. 1 KANEKA's technological and business development

# 1 Core Competencies and Business Model

Since its foundation, KANEKA has promoted technological development with macromolecular and fermentation technologies as its core competency fields (Fig. 1). We have created our highly specialized product groups through these multiple proprietary technologies and their synergetic effects. Such a rich diversity is the driving force behind our growth.

In the future as in the past, we will continue to develop new products and new businesses by uniquely combining our proprietary technologies.

Starting with this, and looking from the perspectives of customers, a materials-to-sale value chain, and globalization, we will construct business models that flexibly respond to the changing environment with new businesses and products.

## 2 Strategic Fields of Emphasis and Business Strategy Direction

Figure 1 shows the strategic fields of emphasis, current business segments, and an outlook on future business groups.

There are four strategic fields of emphasis, in which KANEKA will make concentrated investments of resources as we move toward 2020. These are "Environment and Energy," "Health Care," "Information and Communications," and "Food Production Support."

These fields are future growth markets and domains where KANEKA can contribute to society.

At present, we operate in the seven business segments of Chemicals, Functional Plastics, Expandable Plastics and Products, Foodstuffs Products, Life Science

Products, Electronic Products, and Synthetic Fibers, Other. Each segment will expand its business enterprises in the strategic fields of emphasis by creating new businesses and by M&A, and our current business groups will be changed into business groups concentrating on the above four strategic fields of emphasis by 2020.

The total amount of research and development expenditures by KANEKA Group was 23.3 billion yen for fiscal 2014 (Fig. 2). Of this, 78% (18.1 billion yen) was directed to the four strategic fields of emphasis for promoting business development (Fig. 3).

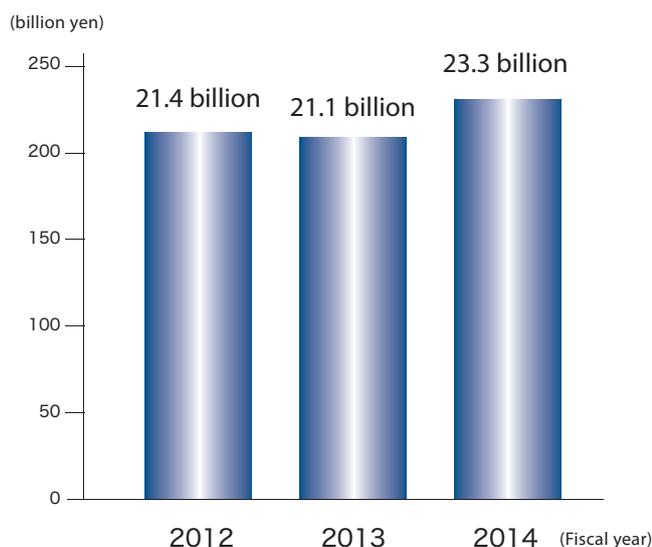


Fig. 2 Changes in research and development expenditure (by KANEKA Group)

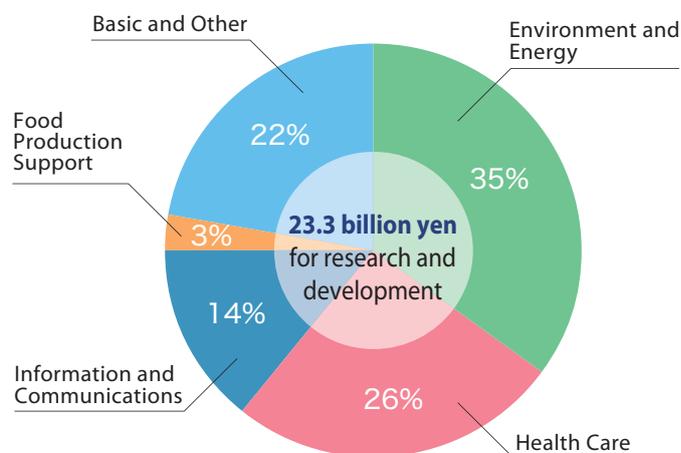


Fig. 3 Research and development expenditures by KANEKA Group in fiscal 2014, grouped by strategic field of emphasis

# 3 Strategic Fields of Emphasis and Overview of Intellectual Property

What lies at the heart of our corporate philosophy, "By a creative integration of people and technology, we will collaboratively create value that breaks fresh ground for the future and contribute to the global environment and to quality of life," is sustainable development. Innovation is indispensable to achieving the sustainable development. We recognize that the innovation is supported by intellectual property. Guided by this basic recognition, we will carry out our management strategies as a research and development enterprise by uniting business strategies, research and development strategies, and intellectual property strategies. Our basic policy concerning the intellectual property strategy lies in contributing to competitive business development and new business creation, by building up a system, based on the intellectual property portfolio management, enabling us to pour our efforts into the strategic fields of emphasis, to promote globalization, to strengthen group management, and to promote M&A.

In the strategic fields of emphasis, we are promoting patent applications and registrations globally, especially in the significantly developing Asia region. KANEKA Group's published domestic patent applications in fiscal 2014 numbered 448, of which 328 (73%) were in the four strategic fields of emphasis (Fig. 4). As of the end of March 2015, KANEKA Group possessed 3,031 domestic patents, of which 2,117 (about 70%) were in the four strategic fields of emphasis, and 2,669 foreign patents, of which 1,633 (about 61%) were in the four strategic fields of emphasis (Fig. 5).

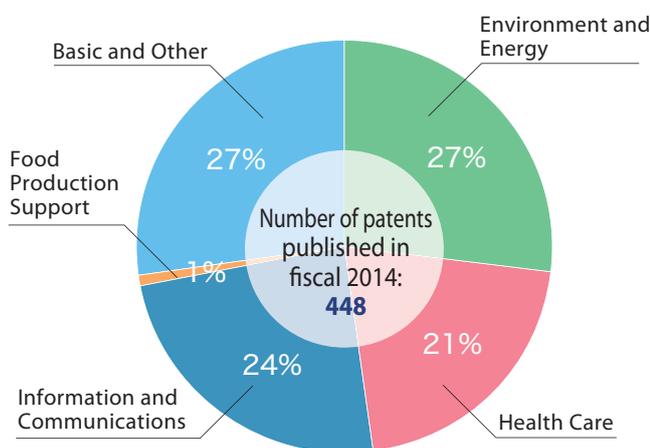


Fig. 4 Number of domestic patents published for KANEKA Group in fiscal 2014, grouped by strategic field of emphasis

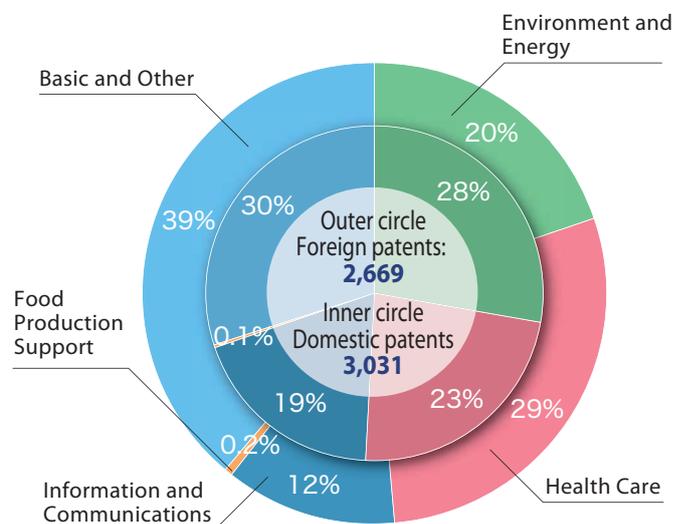


Fig. 5 Number of patents possessed by KANEKA Group as of the end of March 2015, grouped by strategic field of emphasis

# 4 Analysis of Marketability of Technologies and Dominance in Markets

KANEKA aims to be a research and development enterprise. All its employees are making efforts to develop innovations that benefit society and are developing new products and new markets using new technological developments and innovative changes to our existing businesses.

Here we will highlight competitiveness and market growth potential in the four strategic fields of emphasis.

## Environment and Energy

We are developing products that contribute to environmental protection and energy conservation, such as home-use stationary lithium-ion rechargeable batteries that are characterized by their safety, beautiful photovoltaic cells mounted on residential roofs, and expandable plastic products whose themes are "weight-saving" and "energy-saving".

In fiscal 2014, we developed an organic EL lighting device that has less discoloration over its lifespan, and a life of approximately 50,000 hours, the longest in the industry. Sales began in September 2014.

The National Institute of Advanced Industrial Science and Technology (Japan) and KANEKA Corporation jointly demonstrated that a synthetic surfactant can maintain its surface activity effectiveness even if the amount used is reduced to one hundredth when it is mixed with a small amount of KANEKA Surfactin, a natural surfactant produced and sold by KANEKA Corporation. KANEKA Surfactin aids in drastically reducing the consumption of synthetic surfactants.

We concluded a comprehensive agreement with BIOTEC GmbH & Co. KG (BIOTEC) in Germany, concerning the product development of a biodegradable polymer (KANEKA Biopolymer AONILEX). The partnership with BIOTEC accelerates the development of new products targeted at European markets, such as pharmaceutical capsules, coated paper and cardboard, and packaging materials.

## Health Care

We are promoting our business in the Health Care field primarily with businesses in medical equipment, pharmaceutical bulk and intermediates, and functional foodstuffs. We will also expand our business using M&A and other activities.

Through our proprietary biotechnologies and material technologies, we will create new markets and products for our businesses in regenerative and cell therapy, medical polymers, biologics, materials for nursing care, and others.

In fiscal 2014, we launched sales of new products such as a percutaneous transluminal coronary angioplasty (PTCA) catheter that has higher lesion crossability than conventional versions, and a percutaneous transluminal angioplasty (PTA) balloon catheter with a high pressure resistance.

We also developed fluid food products with variable viscosity that are designed to be ingested orally in liquid form and become semisolid in the stomach. These products have been sold on commission by Terumo Corporation since the end of June 2014.

## Information and Communications

We are promoting our electronics materials business, primarily with ultra-heat-resistant polyimide films, optical films, and graphite sheets. We are also developing new businesses in areas such as opto-electro chemicals, thermal solution materials able to eliminate heat problems with increasingly downsized and sophisticated devices, and transparent conductive films, in order to contribute to the information and communications industry.

## Food Production Support

KANEKA has wide-ranging potential to cope with the issue of food shortages caused by population increases. We will create new business through functional feed material and other stockbreeding and cultivation support materials, plant supplements, and other farm production support materials.

We will produce and begin sales of agricultural-use oxidized glutathione (GSSG), which is expected to increase the yield of crops.

## 5 Research and Development-Intellectual Property Relational Diagram; Research and Development Cooperation and Affiliation

Figure 6 shows the relationship of research and development to intellectual property in KANEKA. KANEKA's research and development system is managed by five research institutes and two centers, which report directly to the president. The individual institutes and centers are functionally linked to the research organizations of the business segments and aim for the distribution, effective application, and synergistic effect of research and development resources such as personnel, materials, funds, and information, and are working to advance their

respective research and development themes. As a system under direct control of the president, the Intellectual Property Department develops intellectual property strategies and manages intellectual property portfolios for the entire KANEKA Group. In addition, we have assigned an intellectual property committee member as an intellectual property portfolio manager to each Research and Development institute and each business segment, in order to drive intellectual property efforts effectively.



Fig. 6 Relational diagram of Research and Development Division and Intellectual Property Department

As for research and development efforts, we are globally developing open innovation, including by acquisition and development of overseas research and development bases. By creatively combining external technologies, we are promoting innovative changes in research and development and process innovation in the form of innovation in production methods to develop and propose earth-friendly processes. The project "cell preparation and therapeutic applications of amnion-derived mesenchymal stem cells (hereinafter "amnion-derived MSC")", which was jointly applied for by the National Institute of National Cardiovascular Research Center and KANEKA Corporation, was adopted as the academia-industry collaborative practical development program (NexTEP). The development program was started on July 1, 2014 with the aim of expanding regenerative and cell therapy-related business. We aim to receive permission for production and sale of cell formulations (formulations that utilize regenerative therapy) using the amnion-derived MSC.

On April 24, 2014, we concluded a joint research agreement with the Center for iPS cell Research & Application (CiPA) at Kyoto University, aiming to develop an automated culture device for drug discovery screening using iPS cells (induced pluripotent stem cells). Through this joint research, we will develop a device that can perform an easy and quick drug discovery screening using iPS cells. The device is expected to promote the development of drugs for the treatment of rare and refractory diseases which cannot be cured with the existing drugs. In conjunction with Dr. Yasuhiro Koike of Keio University and Nitto Jushi Kogyo Co., Ltd., we succeeded in developing, by an extrusion method, the world's first "zero-zero birefringent optical acrylic film" that has a practical level of physical properties, through our proprietary technologies of polymer molecule design and extruded film production. We believe that the newly developed film will significantly contribute to the realization of various displays achieving high definition, high image quality, and low power consumption.

## 6 Policies Concerning Acquisition and Control of Intellectual Property, Control of Trade Secrets, and Prevention of Technology Leaks

KANEKA has established intellectual property control regulations and taken care to carry out appropriately the creation, protection, and utilization of intellectual property.

The Intellectual Property Department has established the principle "High-quality, speedy, and global" as its operating principle concerning the acquisition and management of intellectual property. Under this principle, we seek to strengthen our system for acquiring and utilizing foreign patents.

Since fiscal 2011, the Intellectual Property Department has continuously taken measures to increase the rate of patent registration. As a result, the rate increased from about 48% in fiscal 2010 to about 73% in fiscal 2014.

In order to manage our trade secrets, we ensure that employees comply with the policies in the compliance guidebook edited by the CSR Committee, as well as office regulations, know-how management procedures, and others.

To encourage excellent inventions, we have instituted a commendation system for outstanding inventions. In this system, we recognize outstanding inventions, placing emphasis on quality, within 2 years after the patent applications for said inventions are filed. We commended 9 outstanding inventions during fiscal 2014.

During fiscal 2014, we awarded one inventor with the Grand Patent Master award (for obtaining 30 registered patents) and 11 inventors with the Patent Master award (for obtaining 15 registered patents over the course of 15 years of patent applications).

Regarding remuneration for an employee's invention, we determine the amount according to the results of an examination by the Remuneration Review Committee based on invention remuneration regulations and based on the working profit for the preceding three years and royalty income. The result of the review is released within the company. No upper limit is set to the remuneration amount.

## 7 Contribution of License-Related Activities to Operations

Generally, the main objectives for acquiring and controlling intellectual property rights are "to maximize the profit from one's own business" and "to gain direct profit from the intellectual property."

KANEKA's prime objective is "to maximize the profit from its own business." We will develop business operations to be as advantageous as possible, using patent rights as exclusive privileges.

On the other hand, we will use licenses if they will effectively expand markets where our technologies have been patented. Also, as we particularly work toward creating new businesses, we will actively build business alliances using licenses and cross-licenses.

In fiscal 2014, we concluded a non-exclusive comprehensive license agreement with Okayama Barley Genome Technology Co. Ltd. in Japan, concerning patents and patent applications related to agricultural-use oxidized glutathione (GSSG).

We have already registered five GSSG fertilizers in Japan. We are now globally conducting field studies of the GSSG fertilizers, and consistently demonstrating a significant crop yield increase of 10% to 40% in most of the crops. We believe that the use of the GSSG fertilizers will provide a solution to the global food problem.

# 8 Contribution of Patent Groups to Operations

KANEKA contributes to operations through filing and registration of foreign patent applications carefully selected within each business segment after an examination of their compatibility with a wide spectrum of domestic patent applications and business developments.

As Figures 7 and 8 show, the proportion of KANEKA Group's published domestic patents and patents possessed by KANEKA Group in the Functional Plastics, Life Science Products, and Electronic Products segments is higher than those in the other segments. Also, as Figure 9 shows, our domestic and foreign patents are increasing yearly.

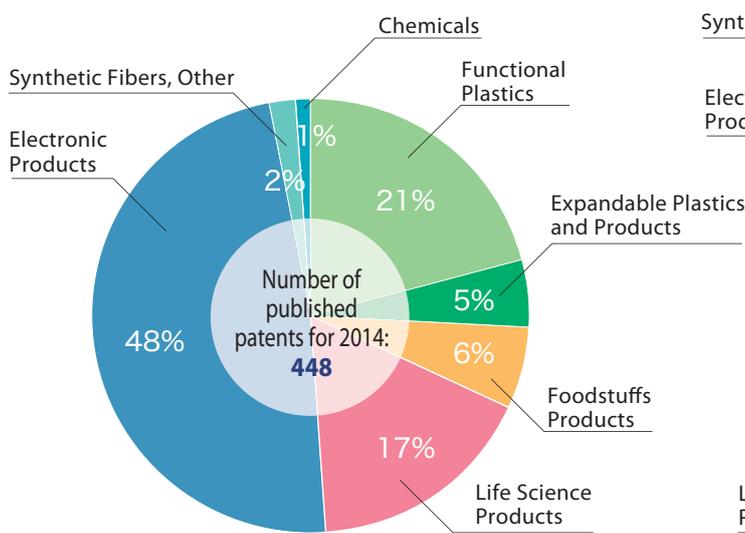


Fig. 7 Number of published domestic patents for KANEKA Group in fiscal 2014 by business segment

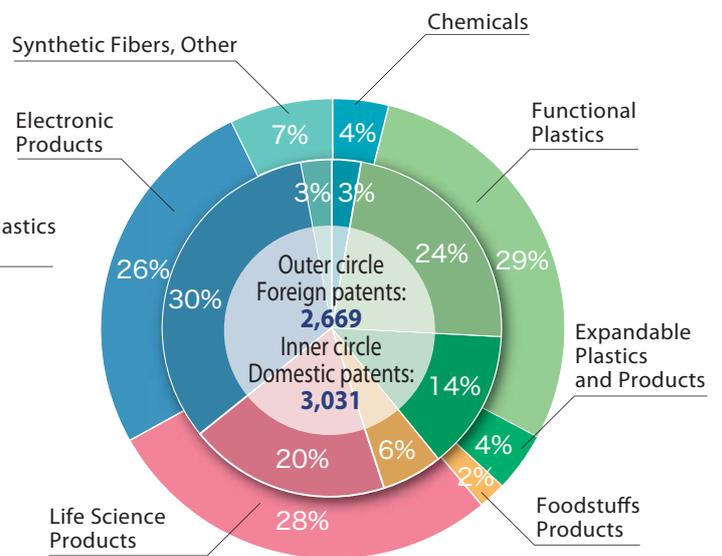


Fig. 8 Number of patents possessed by KANEKA Group at the end of March 2015 by business segment

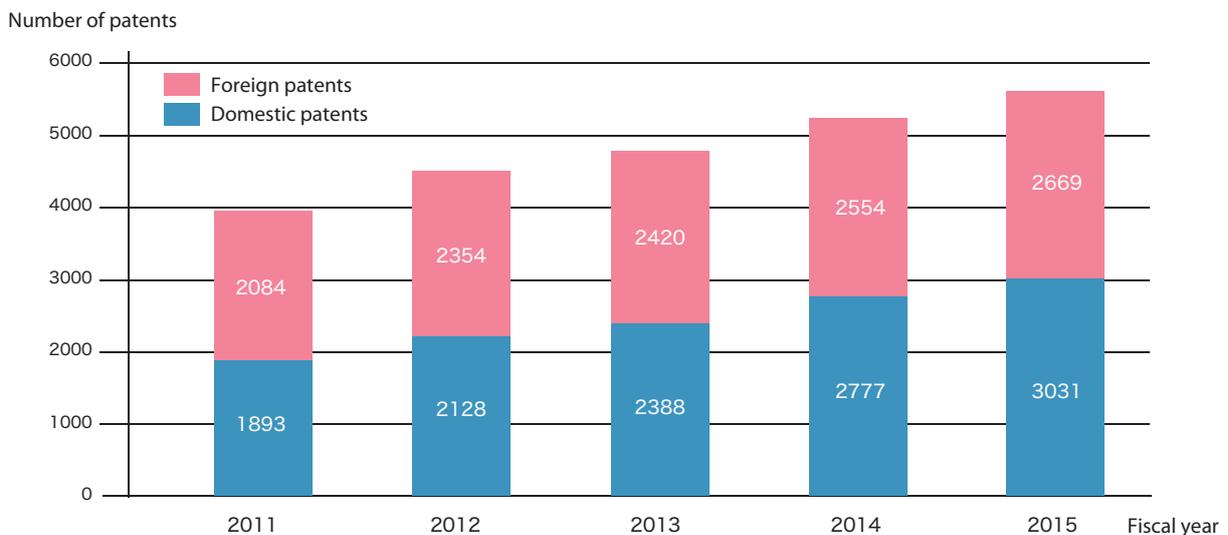


Fig. 9 Changes in number of patents owned by KANEKA Group

We have been filing strategic patent applications, aiming to construct a strong patent portfolio that covers important themes in research and development for the strategic fields of emphasis.

As an example of the structure of our patent portfolio, we will introduce the heterojunction crystalline silicon solar cell. The heterojunction crystalline silicon solar cell has amorphous silicon formed on a crystalline silicon substrate, and is expected to achieve higher efficiency than typical crystalline silicon solar cells. We are planning to launch sales of the heterojunction crystalline silicon solar cell in fiscal 2015.

We have developed an original electrode formation technique using a copper electroplating method. By combining this technique with our well-developed thin-film deposition technique for thin-film silicon solar cell, we have achieved a world-record-class(\*1) conversion efficiency of 24.5%(\*2) in crystalline silicon solar cells with a large wafer size (6 inches), and have also developed a low-cost technique for producing high efficiency crystalline silicon solar cells.

As a result of this research and development, we have filed many patent applications related to copper-plated solar cells and modules, as well as apparatuses and methods for their production. These include 86 domestic applications and 51 foreign applications (of which 19 domestic applications and 9 foreign applications have been registered) as of the end of March in 2015. For example, Japanese patent Nos. 5325349 and 5425349 are patents related to copper plating electrodes that promise a reduced cost and high efficiency, and Japanese patent No. 5456168 is a patent related to a production method for realizing high efficiency by reducing interface defects through hydrogen plasma treatment. We will continue to maintain and strengthen the patent portfolio by promptly filing patent applications concerning our research and development works and by making efforts to reliably acquire patent rights for pending applications.

\*1 According to our own research, as of July 29, 2015

\*2 Certified by the third-party organization, Fraunhofer Institute for Solar Energy System (Fraunhofer ISE) in Germany



Fig. 10 The heterojunction crystalline silicon solar cells



## 9 Intellectual Property Portfolio Policies

We hold that the pivotal issue for maintaining the cycle of intellectual property creation, protection, and utilization is management of intellectual property portfolios.

We believe that the key to intellectual property portfolio management is building up a strong patent portfolio that contributes to our operating revenue, based on strong patents whose rights we can exercise.

In fiscal 2014, we made a presentation at a conference held by the Intellectual Property Association of Japan on the patent value evaluation method, which is the result of joint research with Kobe University under the comprehensive partnership agreement. We carried out further studies with a view to incorporating the patent value evaluation function into a patent search database for commercial use.

# 10 Information on Handling Risks (Current State of Exercise of Rights)

To prevent disputes with other companies, KANEKA always conducts a patent search during presentation of any new theme, proposal for new business, change in specification, and other suitable occasions, and secures patent clearance.

In addition, when necessary, we make use of advice from outside specialists to adopt the safest policy based on comprehensive judgment.

On the other hand, we make it a policy to firmly stand against and promptly deal with any act of patent infringement or imitation by other entities, including with patent infringement lawsuits.

As for the patent infringement case filed by KANEKA Corporation in the United States District Court, Central District of California on March 22, 2011 regarding one of our U.S. patents concerning the manufacturing process of an oxidized form of Coenzyme Q10, the judge of the District Court made a summary judgment that the defendant had not infringed any of the claims of our patent. Dissatisfied by this decision, we appealed to the Court of Appeals for the Federal Circuit (CAFC) on April 2, 2014.

On June 10, 2015, the CAFC reversed part of the District Court's judgment and remanded the case to the District Court.

Further, another patent infringement case is in dispute for the same patent in the United States District Court, Southern District of Texas.

This case was asserted as a counterclaim against a declaratory judgment action filed by the other party, in which they asked the Court to verify their claims of noninfringement on their part and the invalidity of our patent. A jury trial is scheduled to be held by the end of 2015.

As for the patent infringement case filed in the Paris District Court, France on October 28, 2010 regarding one of our European patents concerning a manufacturing method of an oxidized form of Coenzyme Q10, the District Court dismissed the lawsuit. Dissatisfied by the District Court's judgment, we appealed to a higher court. However, based on our comprehensive review of this case, we ended the lawsuit by withdrawing it in February 2015.

We also ended the lawsuit concerning the patent infringement case that was appealed in the Higher Regional Court of Düsseldorf, Germany on April 13, 2012 regarding the same European patent, by withdrawing it in February 2015.

These lawsuits involved our expenses related to legal fees of the other party's counsel and costs incurred in the lawsuit proceedings, but we were not liable for any compensation.

The patent infringement case filed by KANEKA Corporation in the United States District Court, Eastern District of Texas on July 26, 2010 based on five of our U.S. patents concerning polyimide film products and relevant manufacturing methods was later transferred to the United States District Court, Central District of California. Although the case was suspended due to the investigation made by the U.S. International Trade Commission (ITC), the district court lifted the stay of proceedings on December 10, 2012. This case is still in dispute.

After evidential discovery was completed in June 2014, the defendants filed five motions for summary judgments on invalidity or non-infringement of KANEKA's patents, aiming at winning in the first instance before jury trial. After two rounds of hearings, the court finally denied the defendants' motions in March 2015, upholding KANEKA's claim and finding that the case contains matters that should be tried by a jury.

A jury trial is scheduled to be held in November 2015.

As for the patent infringement case filed by KANEKA Corporation in the United States District Court, Northern District of Texas on July 20, 2010 regarding two of our U.S. patents concerning flame retardant polyester fiber for artificial hair, a jury verdict was issued on June 28, 2013 in favor of our claim to recognize the fact of the defendant's patent infringement and our loss incurred as a result of that infringement, and to reject the defendant's argument against the validity of our patents. On November 5, 2013, the District Court ordered the defendants to pay us a total of about six million U.S. dollars in compensation for loss in accordance with the jury verdict.

In March 2015, the United States District Court granted a broad injunction against the defendant's infringement of the two patents. Dissatisfied by the decision, the defendants filed an appeal. Although the appeal case is now pending in the Court of Appeals for the Federal Circuit (CAFC), the injunction maintains its effectiveness.

In May 2015, the defendants filed a motion to stay the appeal in the CAFC until the United States Patent and Trademark Office (USPTO) makes a final decision on pending reexaminations of the two patents.

As a result of our strong opposition, the defendants' motion was denied three weeks after filing.

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As of the end of July 2015, no intellectual property lawsuit that would greatly affect operations has been filed against the KANEKA Group.

### **Cautions Concerning Prospect**

Prospect, planning, policies, management strategies, determination of facts, descriptions concerning the future development, and items other than facts already realized are described based on forecasts, estimations, plans, etc. founded on the information we currently have.

In addition, when making a forecast, we use prescribed premises in addition to the facts already realized. There is no guarantee that such premises are objectively correct or will be realized in the future. The factors that affect the premises include technological and demand trends, the state of competition, the economic environment, fluctuation of the exchange rates, etc.

### **Policy Concerning Disclosure**

This company firmly maintains its policy not to disclose matters of major uncertainty in the future or details of its important strategies. Accordingly, this material discloses no such matters.

The logo for KANEKA Corporation, featuring the word "KANEKA" in a bold, blue, sans-serif font. The letters are stylized with a slight shadow effect.

**KANEKA Corporation**

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