The three strategic domains for JSR Group are Petrochemical Products, Fine Chemicals, and Strategic Businesses. In each of these areas, we are developing business activities based on medium- and long-term perspectives.

Revenue Breakdown by Business Segment

Fine Chemicals and Other Products Business

> 40.1% Elastomers 46.4% Plastics 13.5%

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Petrochemical

Products Business



At a Glance

Segment Sales



* Note: FY means year ended March 31

Petrochemical Products Business Fine Chemicals and Other Products Business Plastics Strategic Businesses Elastomers Fine Chemicals Display Materials Life Sciences Materials Semiconductor Materials **General-Purpose Synthetic Rubbers** Styrenic Resins **Lithography Materials** LCD Materials in-vitro Diagnostic and Research Reagents Photoresists, multilayer materials, etc. Alignment films, protective coatings, color Solution Polymerization Styrene-Butadiene Acrylonitrile-Butadiene-Styrene (ABS) Plastic Beads for Clinical Diagnostics pigment dispersed resists, photosensitive Rubber (SSBR), Emulsion polymerization Acrylonitrile-Ethylene-Propylene-Styrene (AES) **CMP (Chemical Mechanical Planarization)** Research Reagents spacers, etc. Styrene-Butadiene Rubber (ESBR), Materials Plastic Magnetic Beads New FPD Materials Polybutadiene Rubber (BR) CMP slurries and pads Size Standard Beads Optical Coatings, OLED, etc. **Special-Purpose Synthetic Rubbers** Packaging Materials **Bioprocess Materials** Thick-film photoresists, photosensitive Nitride Rubber (NBR), Butyl Rubber (IIR) Protein A affinity material insulation materials. etc. Ethylene-Propylene Rubber (EPM/EPDM) lon-exchange material **Thermoplastic Elastomers (TPEs)** Syndiotactic 1, 2-Polybutadiene "JSR RB™" **Optical Materials** Lithium Ion Capacitors Hydrogenated Polymer "JSR DYNARON™" Styrene-Butadiene Thermoplastic Elastomers "JSR TR™" Styrene-Isoprene Thermoplastic Elastomers "JSR SIS™." etc. **Emulsion Products** Paper Coating Latex, SB Latex, Acrylic Emulsions, etc. **Performance Chemicals** Precision Materials and Processing Business Cells High-Functional Dispersant "DYNAFLOW™" Heat-Resistant Transparent Resin "ARTON™" Laminate Cell Organic/Inorganic Hybrid Coating Materials ARTON[™] Optical Films, etc. Prismatic Cell "GLASCA™" **Optical Materials** Modules Battery Materials UV Curing Optical Fiber Coatings, etc. Laminate Cell Module Thermal Management Materials Prismatic Cell Module

Petrochemical Products Business



The SSBR Business Strategy

In the Petrochemical Products Business, the butadiene-naphtha spread and the Company's business income are linked. The key factor that put downward pressure on the Group's overall income in FY ended March 2016 was first quarter and fourth quarter income in the Petrochemical Products Business. At this time, we forecast continuing market price stagnation in FY ending March 2017 and beyond.



- Year-on-year increase in automobile tire production in North America, China, and Europe; year-on-year decrease in Japan
- Year-on-year decrease in total elastomer sales volumes
- Significant increase in SSBR sales volumes thanks to the contribution from full-scale operation at JSR BST Elastomer Co., Ltd. (JBE), the joint venture in Thailand
- Year-on-year decrease in net sales on a decline in product prices accompanying falling raw materials prices and lower sales volumes

Change in butadiene and naphtha prices





Petrochemical Products Business

We also plan to increase supply capacity for SSBR, a product whose sales volume is steadily increasing, by 19% year on year in 2016 in a second phase of construction at JBE and also plan to start production in Hungary in 2018. In addition, our capacity utilization rate of nearly 100% is extremely high compared to other companies.

Production in Thailand started up behind schedule, due partly to manufacturing delays and partly to approval delays. Our SSBR is used in original equipment applications, and it took time to obtain approval from automakers. Because the product is used in original equipment, once approval has been obtained, demand can be expected to continuously increase. This is a business model that differentiates JSR from competitors. Future plans call for reinforcing the Group's sales bases in Europe, where SSBR demand will increase, and building a technical support system in China, where market needs exist. Although we are now introducing fourth-generation SSBR in Thailand, we are also establishing the technology for a fifth-generation product. In addition, we are working to introduce a product for the high-volume segment with the aim of increasing JSR's global market share for SSBR.



Change in JSR's SSBR production capacity and sales volume



- Sales increase in Japan and overseas, despite a year-on-year decrease in domestic automobile production
- Year-on-year increase in sales volumes for industrial material applications due mainly to strong sales of materials for miscellaneous goods
- Year-on-year decrease in net sales as the sales volume increase failed to compensate for a decline in product prices accompanying falling raw materials prices
- Year-on-year increase in operating income from profitability improvement and higher sales volumes

Preparing for a Leap Forward in Plastics

JSR, Ube Industries, and Mitsubishi Rayon are proceeding with integration of our ABS respective resins businesses through the merger of Techno Polymer, a wholly owned subsidiary of JSR, and UMG ABS, a company in which Ube Industries and Mitsubishi Rayon each holds a 50% equity interest. Due diligence is now underway. The three companies are proceeding with realignment of the synthetic resin industry to develop a business structure capable of stable supply into the future in the Japanese market, which is shrinking year by year. The aim to actively pursue overseas sales expansion by combining the differentiated materials technologies of the merging companies.



Fine Chemicals and Other Products Business



Preparing for Commercialization of EUV Resists

In the Semiconductor Materials business, JSR lithography materials have captured a high market share in leading-edge 20nm processes, and we expect to keep the high share in next-generation 16nm and 14nm processes. Furthermore, we will focus on extreme ultraviolet (EUV) lithography materials. EUV lithography is expected to be a key technology that will

Image of an EUV joint venture company





- Display materials business plunged sharply due to the demand slowdown of our customers
- Net sales of the life sciences business substantially expanded



- Semiconductor demand was flat due to weakening demand for smartphones
- Materials demand was week during the generation transition from 20nm process to 16nm and 14nm process



Fine Chemicals and Other Products Business

propel advancement of the semiconductor miniaturization and density growth predicted by Moore's law even in sub-10nm generations. In February 2016, JSR and imec, a world-leading nano-electronic R&D center, established joint venture company EUV Resist Manufacturing & Qualification Center N.V. (EUV RMQC). Investigation of practical application of EUV technology is gaining impetus in the semiconductor industry, and establishment of mass-production facilities and a quality assurance system is essential. EUV RMQC will leverage the key strengths of the JV partners, JSR's high-performance materials manufacturing technologies and quality control capabilities and imec's state-of-the-art equipment and processes, to provide EUV lithography materials technology to companies in the semiconductor industry that manufacture leading-edge devices.





 Sudden slowdown in demand for large-screen TVs and multifunctional mobile devices from the second half onward

Marked decline in selling prices due to intensifying competition

Development of the Display Business in the Chinese Market

China's worldwide share of liquid crystal panel production is expected to exceed 20% in 2016. JSR entered the Chinese market, where continued high growth is expected, ahead of competitors and will proceed steadily with sales expansion in China. Specifically, we are constructing a plant at JSR Micro (Changshu) Co., Ltd. (JMCH), a joint venture established in China to manufacture display materials, and plan to start operation in 2016. In response to the commoditization of liquid crystal panels, we are working to secure business income through operational reforms and are pursuing expansion of the product line related to mobile products, from which continued growth can be expected. Furthermore, we will work to maintain income from the business overall through drastic structural reform of operations at each production site and aim to continuously expand the product portfolio.



Fine Chemicals and Other Products Business

Business Policies for Strategic Businesses

The Company will reposition its activities in the life sciences area, which has been positioned as a strategic business in the Fine Chemicals and Other Products Business segment, as a new pillar of the business portfolio comparable to the Fine Chemicals business. Building on our success in expanding the scale of this business, we will newly establish a Life Sciences Business Division and focus on two fields: bioprocess fields and diagnostic and research reagent fields. Although the importance of the Japanese market will not change, leading-edge technologies and markets in these fields are concentrated mainly in the United States and Europe. An American JSR senior officer will serve as general manager of the division and lead the business globally.

In the area of bioprocess materials, the Group will make efforts to increase KBI's contract development and manufacturing, biopharmaceuticals for which demand is growing year by year, in Europe as well as the United States. We will work to increase overseas sales of diagnostic and research reagent materials by leveraging the strengths of MBL. We are also considering entering new fields to further expand the business.

The diagnostic intermediates business of J&W Beijing Biotech Co., Ltd. (J&W), a joint venture in China, is also progressing steadily. In Japan, we are proceeding with construction of JSR-Keio University Medical and Chemical Innovation Center, a joint research facility with Keio University School of Medicine.

Although the Group completed construction of a new plant with the expectation of increasing sales in the lithium ion capacitors (LICs) business, JSR LICs were not adopted for high-volume applications. To turn the LICs business around, we have undertaken operating cost reductions and changed the market. We will aim to achieve profitability by focusing the business on applications where the ultra-low resistance, high voltage, and high durability characteristic of LICs can be expected to result in high added value.



 Substantial increase in net sales due to the effect of two newly consolidated Group companies

Sales of the Life Science Business





R&D Policy and Organization



Number of Patents

The number of patents held by JSR is steadily increasing in Japan and overseas, mainly in the Fine Chemicals and Other Products Business.

As of March 31		2010	2011	2012	2013	2014	2015	2016
Japan	Petrochemical Products	374	377	387	358	334	308	303
	Fine Chemicals and Other Products	1,465	1,685	1,972	2,331	2,633	2,717	2,867
	Others	75	67	79	89	104	99	90
	Subtotal	1,914	2,129	2,438	2,778	3,071	3,124	3,260
Overseas	Petrochemical Products	492	489	507	523	516	531	545
	Fine Chemicals and Other Products		2,365	2,516	2,741	2,957	2,810	3,075
	Others	39	36	33	34	33	29	22
	Subtotal	2,695	2,890	3,056	3,298	3,506	3,370	3,642
Total		4,609	5,019	5,494	6,076	6,577	6,494	6,902

We will use accumulated technologies to open up new fields of technology

We see our R&D achievements as keys that will unlock the future for JSR. We have consistently striven to enhance an R&D organization that has created many new high-performance materials based on our original technologies. JSR's involvement in the petrochemical field began at the time of our founding with elastomer technology. We have since developed our activities globally by creating highly competitive materials and technologies for a wide range of technology fields, including the seemingly disconnected area of IT. We have accumulated a record of continual research and development to expand business areas behind our main business. That is, not only to deepen our knowledge of our core polymer technology, but also to develop ways of combining it with other technical fields such as optics, inorganic chemistry, and precision processing technology. We continue to challenge ourselves to develop new fields that offer major growth potential, such as next-generation electronics, life sciences, environment, and energy.

Integrating R&D with business activities

After discovering seeds of innovation through our R&D activities, we need to link those seeds to actual business activities. Another example of the accelerating integration of R&D and business activities through direct interaction between our researchers and customers. The leading countries and regions for cutting-edge research vary according to every field such as elastomers, semiconductor materials, display materials, life sciences, environment, and energy. By locating our R&D and business sites in the most advanced areas, we are building a structure that will allow us to respond quickly to new trends. We also make extensive use of strategic investments and business partnerships to secure rapid access to the advanced specialist technologies and knowledge, and connect our businesses that we need for our next-generation business creation. We are evolving a structure that can provide new value to society by flexibly integrating R&D with business activities within JSR Group and beyond.

R&D Structure

R&D Policy and Organization

Creating materials for the future through materials innovation

Petrochemical Fine Products Chemicals Life Sciences and others **Business** Business **Core Business Third Pillar Next Generation Next Generation** Support Research Seed Research **Technology Research** Performance Polymer JSR Functional Materials **Research Laboratories Research** Center Display Materials **Business** Research Laboratories Division Collaboration Collaboration Collaboration Fine Electronic Materials **Research Laboratories** Proposal on Advanced Materials Technology Seeds **Research Laboratories** Customer and Consignment Market Needs Research Precision Processina Technology Group, Consortia Precision Processing Lab. Tsukuba Research Joint Research Laboratories Market Needs Technology Seeds 1 **CVC** Activities (Corporate Venture Capital)

A Global Approach to Technology Innovation Centering on Four R&D Facilities in Japan

JSR currently has R&D facilities in Yokkaichi and Tsukuba in Japan. These R&D facilities support existing business activities while also helping to launch new businesses.

In our existing businesses, we are enhancing technical service support in a number of countries and constructing a system capable of providing timely support for customers' business promotion. To launch new businesses, they therefore participate in highly innovative and exploratory research initiatives with customers, domestic and international universities, and research institutes. Located within Kinki University's Molecular Engineering Institute, JSR Functional Materials Research Center is the focus of seed investigation and research in JSR Group. We have established JSR-Keio University Medical and Chemical Innovation Center, a joint research facility, within Keio University Shinanomachi Campus, and are conducting research relating to new medical fields to realize health and longevity.