JSR CORPORATION **ANNUAL REPORT 2014**

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RATIONS

Fine Chemicals and

The JSR Group's objective is to secure stable earnings from the Petrochemical Products Business (Elastomers and Plastics) and Fine Chemicals business and increase future profitability by positioning the Life Sciences business and Lithium Ion Capacitor business as Strategic businesses.



Other Products Business 33.8% Elastomers 51.6% Plastics 14.6%

Petrochemical Products Business

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Fine Chemicals and Other Products Business

AT A GLANCE

* Note: Fiscal year means year ended March 31

Elastomers Net Sales

Petrochemical Products Business



General-Purpose Synthetic Rubbers Solution Styrene-Butadiene Rubber (S-SBR), Emulsion polymerization Styrene-Butadiene Rubber (E-SBR), Polybutadiene Rubber (BR)

Special-Purpose Synthetic Rubbers

Nitride Rubber (NBR), Butyl Rubber (IIR) Ethylene-Propylene Rubber (EPM/EPDM)

Thermoplastic Elastomers (TPEs)

Syndiotactic 1, 2-Polybutadiene "JSR RB™" 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*

High-Functional Dispersant "DYNAFLOWTM" Organic/Inorganic Hybrid Coating Materials "GLASCATM" Battery Materials Thermal Management Materials

*Part of Strategic businesses until March 31, 2014.



Acrylonitrile-Butadiene-Styrene (ABS)

Acrylonitrile-Ethylene-Propylene-Styrene (AES)

Plastics

Plastics

Bioplastics



Semiconductor Materials



Lithography Materials (Photoresists, multilayer materials, etc.) CMP (Chemical Mechanical Planarization) Materials (CMP slurries and pads) Interconnect Materials (spin-on low-k materials) Packaging Materials (Thick-film photoresists, photosensitive insulation materials, etc.)



LCD Materials (Alignment films, protective coatings, color pigment dispersed resists, photosensitive spacers, etc.) New FPD Materials

(Optical Coatings, OLED, etc.)

Strategic Businesses



Lithium Ion Capacitors Cells and Modules Life Sciences Materials Size Standard Particles Particles for Clinical Diagnostics Research Agents Magnetic Particles, etc. Precision Materials

and Processing Business

Heat-Resistant Transparent Resin "ARTON™" ARTON™ Optical Films Transparent Conductive Films "ELART™", etc.

Optical Materials

UV Curing Optical Fiber Coatings, etc.

REVIEW OF OPERATIONS CREATING NABLE VALUE GLOBAL NETWORK

PETROCHEMICAL PRODUCTS BUSINESS



Developing the S-SBR Business Sector

The Petrochemical Products Business has developed a business model for securing stable earnings regardless of raw materials prices and is a source of stable earnings for the company as a whole. The ability to secure stable earnings is an outcome of significant improvement in the break-even point. We will continue to seek scale expansion and stabilization of earning power in this business. Solution polymerization Styrene-Butadiene Rubber (S-SBR) products for fuel-efficient tires is a core business from which JSR expects further growth as a key product of the Elastomer Business. We aim to capture the top global market share in S-SBR by increasing production capacity and cost competitiveness and maintaining technological superiority in Japan and overseas.

Worldwide demand for S-SBR is increasing by about 8% per annum, despite weak demand for passenger car tires. The start of full-scale manufacturing at JBE in Thailand in 2015 to meet this demand is expected to contribute to future earnings. We plan to expand total annual production of S-SBR at three production bases in Japan, Thailand, and Hungary to over 200,000 tons. The Phase 1 plant in Thailand has production capacity of 50,000 tons, and the Phase 2 plant scheduled to go into operation in 2016 will have capacity for 50,000 tons. If the plant scheduled for construction at JSR MOL Synthetic Rubber Ltd., a joint venture company established in Hungary, starts operation in 2017 as planned, 60,000 tons of capacity will be added. Implementing these plans is expected to result in the world's highest production capacity for S-SBR, a growth product, in fiscal 2018.

Elastomers

Performance Overview





- The domestic tire and automobile production markets were weak.
- Sales volumes increased slightly, including S-SBR products.
- Net sales increased due to price revisions in line with increases in prices of raw materials.
- The S-SBR Group company in Thailand began sales activities and recorded net sales.
- Operating income decreased as a result of unfavorable prices, higher fixed costs due to inventory reduction, and cost increases at overseas subsidiaries.

Plastics

Performance Overview

Net **¥57.8** billion (+11.6%)



- Although sales of products for automobiles recovered in the second half, lackluster sales of plastics for industrial materials resulted in a year-on-year decrease in sales volumes.
- Sales value increased year on year, partly as a result of the shift to yen depreciation.
- Net sales and operating income increased as a result of product price revisions accompanying fluctuation in raw materials prices, cost reduction efforts, and the impact of the weak yen.

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PETROCHEMICAL PRODUCTS BUSINESS

Since future supply shortages of butadiene, a key raw material of S-SBR, are expected to result from factors such as increased use of shale gas, we will develop a structure to secure stable supplies.

Utilization of Performance Chemicals

The Performance Chemicals business has engaged in applications development as a Strategic businesses for the purpose of utilizing elastomer products unique to JSR in product development in the environment and energy conservation fields. Heretofore, this business has utilized technologies cultivated in the development of polymer materials to develop various performance chemicals, such as a high-performance dispersant, highfunctional sol-gel materials, particles for industrial use, battery materials, and thermal management materials. Since a certain level of R&D results has been achieved, we will return the Performance Chemicals business to control of the Petrochemical Products Business and focus on sales. In addition, we will engage in the development of original products by applying these technologies in the development of new applications in the Petrochemical Products Business.

Sales Volume of JSR S-SBR

S-SBR market CAGR +8% (Mar. 2011 to Mar. 2014)



(JSR prepared the chart based on statistics of LMC2013, etc.)

How do tires enhance fuel efficiency?

- **1. Tire distortion is the enemy of fuel efficiency** Energy loss arising from distortion of running tires results in rolling resistance.
- 2. Reducing energy loss from tire distortion

The key point is to lower the amount of heat generated from friction among rubber molecules and among reinforcing agents, as well as between rubber molecules and reinforcing agents.

3. Secret to synthetic rubber molecules

Simplifying the process of bonding reinforcing agents to synthetic rubber molecule extremities prevents agglutination among reinforcing agents, and the resulting dispersion reduces friction-induced heat generation.

4. JSR's technological strength

JSR's S-SBR excels due to a technology that strengthens the bonding between rubber molecules and reinforcing agents. The result is highly energy-efficient tires that are being widely adopted in the market.



FINE CHEMICALS AND OTHER PRODUCTS BUSINESS



Steady Development of Advanced Materials

The rate of growth in worldwide silicon wafer shipment area during the past three years was minus 1%, and the business environment in the semiconductor market is expected to remain uncertain for some time.

Nevertheless, JSR continues to hold a high market share of materials for the 20nm–16nm generation. Although the semiconductor market is weak, net sales of ArF immersion photoresists are increasing by 50% year on year, and sales of JSR advanced lithography materials are likely to continue to increase.

JSR is steadily increasing sales of lithography materials, including ArF photoresists, and TCX topcoat materials for immersion exposure, as well as spin-on glass (SOG), an intermediate material. To this end, we are pursuing increased quality control and enhanced manufacturing technologies. In order to manufacture and supply photoresists for the 20nm and sub-20nm generations, we put our effort into total defect control from the raw material stage through to the finished product stage. Therefore, we are selectively investing in R&D and manufacturing facilities at our Yok-kaichi Plant.

Performance Overview

Net

Sales







- Operating income increased year on year despite upfront investment in areas such as development of next-generation leadingedge technologies.
- Sales of FPD materials were strong, and the weak yen contributed to a year-on-year sales increase.
- Full-scale sales of LIC began, and a JSR subsidiary decided to build a high-volume production plant.

Semiconductor Materials

Performance Overview



Demand in the semiconductor market was weak.

- Immersion photoresists drove sales of ArF photoresists, while sales of multilayer materials rose only slightly.
- Net sales increased in the weak yen environment.

Flat Panel Display (FPD) Materials

Performance Overview



- Plant operating rates at LCD panel manufacturers increased by 2% to 3% year on year.
- We recovered market share, mainly color pigmented resists, through further reinforcement of R&D function in South Korea and Taiwan.

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FINE CHEMICALS AND OTHER PRODUCTS BUSINESS

Growth Drivers

Steady growth is expected to continue in the FPD market. On a panel area basis, shipments have increased at an annual rate of 8% for the past three years, with materials for large panels rising by 7% and materials for small-to-medium size panels rising by 16%. Commoditization of large panels is accelerating, and in the small-to-medium size panel sector it is necessary to support advanced technologies. Shipment of small-to-medium size panels, 20% of the market on a value basis in fiscal 2014, are still growing. We will continue efforts to increase adoptions of products such as materials for mobile products.

Strategy for FPD Materials

Today, there is increasing proliferation and commoditization of large panel displays, mainly for televisions, with demand centered on manufacturers in South Korea and Taiwan. Consequently, we are shifting our operations, from product development to manufacturing, to those regions and aggressively pursuing cost efficiencies.

Smartphones, tablet PCs, and similar devices that use small-to-medium size panels are becoming increasingly sophisticated. At the same time, the materials used for these panels, such as LCD materials, thin retardation ARTON film, and indium tin oxide (ITO) film for touch panels, need to be high-performance, resulting in high value. We are promoting a "vertical integration strategy" in order to expand our product portfolio in line with the need for enhanced performance and higher added value. JSR's diverse product portfolio covers the different kinds of materials required by high-performance panels.

Expansion into the Sensors Market

In the past, information technology has connected us to the Internet and networks using mainly computers, smartphones, and tablet PCs. But future technical advances are expected to create an Internet of Things (IOT), in which televisions, cameras, audio devices, and other objects become interconnected. Here at JSR, we believe that the IOT will serve as a driver for future growth in the digital market. As IOT continues to spread, we think that technologies in five areas will be particularly important to the digital industry: interface, connectivity, power, process, and sensors. We think that sensors above all will increase in importance in the future. We plan to open up and develop the sensor market, starting with CMOS image sensor materials, and expand and upgrade our existing product lines in other market sectors.

FPD Industry Trends by Panel Area and Amounts

Change in shipments from 2010 to 2013 +8% CAGR (area) (Breakdown of area: large-sized panels +7%; small-to-medium sized panels +16%)

Ratio of Small-to-Medium Size Panel Shipments to Total Shipments





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FINE CHEMICALS AND OTHER PRODUCTS BUSINESS

Strategic Businesses

Performance Overview

Net Sales ¥20.3 billion

- In the results for Strategic businesses and Other business, sales performance of optical fiber coating materials and ARTON film was lackluster.
- Steady results were achieved in the Lithium Ion Capacitor business.
- Sales of life science materials steadily increased.

Aggressive Business Development in Preparation for Scale Expansion

We intend to accelerate the growth of our Strategic businesses, centering on life sciences and lithium ion capacitors. In order to achieve growth, we also recognize the importance of adopting an expansion strategy that considers M&A activities and capital alliances as ways to introduce outside technologies.

Life Sciences

Over many years, the JSR Group has established a solid track record in the diagnostic reagents and medical polymers business. J and W Beijing Biotech Co., Ltd., a joint venture company located in China, engages in the research, manufacturing, and sale of in-vitro diagnostic agents in China and Southeast Asia, where diagnostic reagents for HIV, hepatitis, and other infectious diseases are attracting attention. The Company is growing steadily. In addition, in collaboration with capital alliance partner MEDICAL & BIOLOGICAL LABORATORIES CO., LTD. (MBL), we are expanding our business operations into the diagnostic reagents and biologics drug discovery process markets. We plan to double the size of the business over the next three years from sales of about ¥10 billion in fiscal 2014. JSR is affiliated in the bioprocess materials field concerning refinement technologies of antibody drug production, and is exploring new technology seeds and business fields with the aim of efficiently linking promising technologies and products to growth from the Life Sciences business.

Track Record



Automatic Guided Vehicles (AGV)



Hybrid Excavators



Hybrid Buses

Radiographic Cassettes

Lithium Ion Capacitors

JSR believes that customer trust and quality assurance are important in the storage device business, and we have established a track record of adoptions by about ten companies. Net sales in fiscal 2014 increased threefold year on year, and JSR subsidiary JM Energy Corporation decided to build a high-volume production plant for LICs in preparation for full-scale business operation. The new plant, which will have production capacity of three million cells per year, is expected to start commercial production in 2015. Future plans call for expansion of the Lithium Ion Capacitor business to a variety of applications, starting with large vehicles and hybrid cars.



GLOBAL R&D, PRODUCTION, AND MARKETING OPERATIONS



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		2008	2009	2010	2011	2012	2013	2014
Japan	Petrochemical Products	428	428	374	377	387	358	334
	Fine Chemicals and Other Products	1,103	1,269	1,465	1,685	1,972	2,331	2,633
	Others	67	73	75	67	79	89	104
	Subtotal	1,598	1,770	1,914	2,129	2,438	2,778	3,071
Overseas Petrochemical Products		493	512	492	489	507	523	516
	Fine Chemicals and Other Products	1,721	1,955	2,164	2,365	2,516	2,741	2,957
	Others	36	34	39	36	33	34	33
	Subtotal	2,250	2,501	2,695	2,890	3,056	3,298	3,506
Total		3,848	4,271	4,609	5,019	5,494	6,076	6,577

Global R&D Strategy

Opening Up New Technology Fields Globally as a Technology-Oriented Company

JSR got its start in the petrochemicals field, making synthetic rubbers as its core business, and then expanded into the field of information and electronics materials. We subsequently expanded into precision materials and processing, life sciences, and the environment and energy fields and have provided the world with numerous high-performance materials made possible by unique technologies. JSR's comprehensive research and development capabilities support this business development.

GLOBAL NETWORK

JSR currently engages in R&D at four sites in Japan: the Yokkaichi Research Center, the Precision Processing Technology Group, Tsukuba Research Laboratories, and the JSR Functional Materials Research Center.

Furthermore, in recent years we have established research bases at Group companies in South Korea and Taiwan and we are now developing a global research structure for display materials.

JSR's R&D centers and laboratories are responsible for supporting the creation of new businesses as well as supporting existing businesses. To achieve this goal, the centers and laboratories work closely with involved business divisions to set research themes that anticipate the needs of the market and maintain and strengthen a flexible research organization that responds quickly to the circumstances of users. JSR also conducts consignment research, joint research, and consortium projects, working with clients, universities, research institutions, and other parties in Japan and overseas, with the goal of identifying the latest technologies and knowledge, incorporating them in the Company's R&D at the first opportunity, and utilizing them on a trial basis.

Guided by the belief that successful research and development activities shape the future of JSR, we will further cultivate our core polymer technologies and aggressively expand into new fields by fusing polymer technologies with photochemistry, inorganic chemistry, precision processing, and biotechnologies.

GLOBAL R&D, PRODUCTION, AND MARKETING OPERATIONS

Global Operations—Petrochemical Products Business Strengthening the Global Supply System with a Focus on Asia and Europe

For some years, the Petrochemical Products Business, which engages mainly in synthetic rubbers and plastic products, has been building a global manufacturing and sales network. The Group has sales operations in major centers in China and Southeast Asia to closely monitor the needs of local customers in the automobile and electronics industries.

We are also upgrading operations that manufacture synthetic rubber used in automobile parts and fuel-efficient tires, which have enjoyed growing demand in recent years. In addition to producing synthetic rubber for fuel-efficient tires at the Yokkaichi Plant in Japan, we established JSR BST Elastomer Co., Ltd. in collaboration with Bangkok Synthetics Co., Ltd., a local business partner in Thailand. The Company is the Thailand's first Solution polymerization Styrene-Butadiene Rubber (S-SBR) manufacturing plant that started operations in 2013. We have also decided to manufacture and sell S-SBR at a plant in Hungary, which will act as a supply base for Europe.

Global Operations—Fine Chemicals and Other Products Business

Development of a Global System to Meet Market Needs Fine Chemicals: Semiconductor Materials

In the semiconductor materials business, Silicon Valley based JSR Micro, Inc. and JSR Micro N.V. in Belgium manufacture, provide technical support and sell cutting-edge lithography materials. It has also introduced exposure equipment comparable with that of client companies in order to support R&D on leading-edge products. We are currently boosting competitiveness by concentrating R&D investment in advanced fields on activities at the Yokkaichi Research Center.

Fine Chemicals: FPD Materials

In South Korea and Taiwan, which have the largest world markets for FPDs, JSR Micro Korea Co., Ltd. and JSR Micro Taiwan Co., Ltd. hold important positions. Both companies have expanded the scale of production and the items they handle in order to meet demand from the rapidly expanding FPD market. To enhance and accelerate their future responses

to customers, they are building new research laboratories.

Meanwhile, many LCD panel manufacturers are planning to build new production facilities in China. They include local companies, as well as major corporations from Japan, South Korea, and Taiwan. To address the needs of those customers, the JSR Group is working to provide technical services and build a product development system in China.

GLOBAL NETWORK

Strategic Businesses: Life Sciences

In the life sciences sector, JSR Life Sciences Corporation was split off as a separate company that offers advanced diagnostic reagents and bioprocess materials developed in-house along with medical polymers, elastomer materials for medical applications previously commercialized as part of the Petrochemical Products Business. In 2012, JSR established J and W Beijing Biotech Co., Ltd., a joint venture company with Beijing Wantai Biological Pharmacy Enterprise Co., Ltd., a diagnostic reagents manufacturer located in Beijing. J and W Beijing Biotech develops, manufactures, and sells latex reagents and chemiluminescent reagent intermediates. In addition, JSR has entered into a capital alliance with Medical & Biological Laboratories Co., Ltd. (MBL), the diagnostic reagents market leader in Japan.

JSR has also invested in and entered into operating alliances with Austria-based BIA Separations and Switzerland-based ChromaCon, and Canada-based Natrix, leaders in purification and separation process technologies in the field of biologics manufacturing. We plan to bring products to market more quickly by utilizing the technologies of these companies.

Strategic Businesses: Lithium Ion Capacitors

JSR subsidiary JM Energy Corporation plays a central role in developing the Lithium Ion Capacitor business in collaboration with Group operations in Europe and the North America. JM Energy Corporation, which operates the world's first facilities for the mass production of large-capacity LICs, has decided to build a large high-volume production plant on the grounds of its current plant to reinforce the supply structure. JSR Micro, a JSR subsidiary with operations in Europe and North America, covers these geographical areas. These business operations in Japan and overseas will accelerate global development of the Lithium Ion Capacitor business.