

# Financial Results for FYE 3/2021

May 10th, 2021

STELLA CHEMIFA CORPORATION

Securities code: 4109

## 【Financial Results】

---

- Performance Highlights P. 3
- Financial Summary P. 4 – 13
- Financial Forecast P. 14 – 16
- Shareholder Return P. 17

## 【Reference Material】

(Corporate Profile • Introduction of Our Business)

---

- Corporate Profile P. 19
- Subsidiaries & Associates P. 20
- Introduction of Our Business P. 21 – 37

## [FYE 3/2021 Results]

- ◆ Semiconductors and LCDs saw increased shipments to domestic market and other areas including Taiwan, albeit with lower shipments to South Korea.
- ◆ Shipments of enriched boron (10B) used by nuclear energy-related facilities contributed to the profit.
- ◆ Profitability improved in the Medical Business owing to the launch of sales of pharmaceuticals and curbed expenses.

## [FYE 3/2022 Forecast]

- ◆ It is expected that Semiconductors and LCDs will see higher overseas sales and that sales of enriched boron will expand.
- ◆ Prices of key raw materials are assumed to rise due to supply and demand trends and the impact of foreign exchange rates.

# Financial Summary



(million yen)	FYE 3/2020	FYE 3/2021	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	33,729	32,893	-836	-2.5
Gross Profit	6,685	8,213	1,527	22.8
Operating Profit	2,407	4,081	1,674	69.5
Ordinary Profit	2,307	4,020	1,713	74.3
Profit Attributable to Owners of Parent	1,924	2,959	1,035	53.8
Earnings Per Share (yen)	149.00	230.70		
Dividend (yen)	45	47		
ROE (%)	5.8	8.4		

# Sales Revenue and Operating Profit by Business Segment

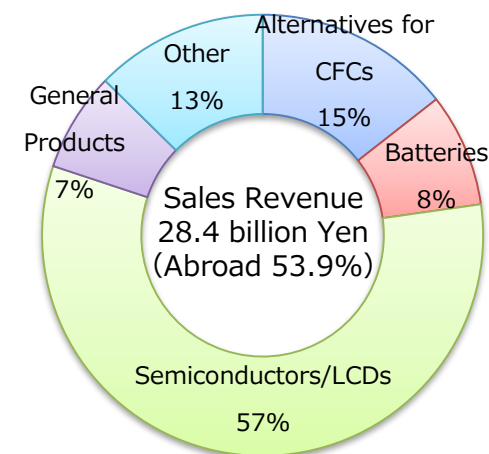


(million yen)	Sales Revenue				Operating Profit			
	FYE 3/2020	FYE 3/2021	Increase/ Decrease		FYE 3/2020	FYE 3/2021	Increase/ Decrease	
			Amount	%			Amount	%
High-Purity Chemical Business	29,058	28,404	-653	-2.2	2,897	4,201	1,303	45.0
Transportation Business	4,429	4,069	-360	-8.1	502	593	91	18.3
Medical Business	-	205	205	-	-1,035	-644	390	-
Other	241	213	-28	-11.8	36	26	-9	-25.7
Eliminations and Corporate	-	-	-	-	7	-95	-102	-
Total	33,729	32,893	-836	-2.5	2,407	4,081	1,674	69.5

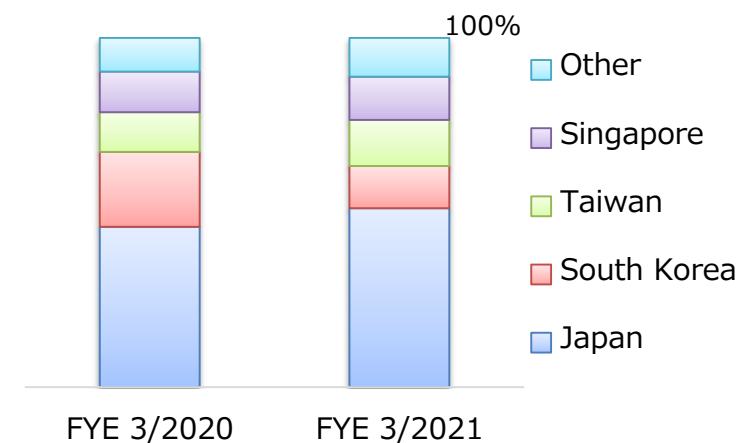
# Sales Revenue of High-Purity Chemical Business (Breakdown)

(million yen)	FYE 3/2020	FYE 3/2021	Increase/ Decrease	Percentage Increase/ Decrease
Surface Treatment	1,525	947	-577	-37.8
Alternatives for CFCs	4,872	4,099	-773	-15.9
Batteries	2,576	2,364	-212	-8.2
Semiconductors/ LCDs	15,687	16,283	596	3.8
Semiconductor Devices	446	696	249	55.9
Catalysts	925	852	-73	-7.9
Gypsum	201	175	-26	-13.1
General Products	1,835	2,067	232	12.7
Other	988	918	-69	-7.0
<b>Total</b>	<b>29,058</b>	<b>28,404</b>	<b>-653</b>	<b>-2.2</b>

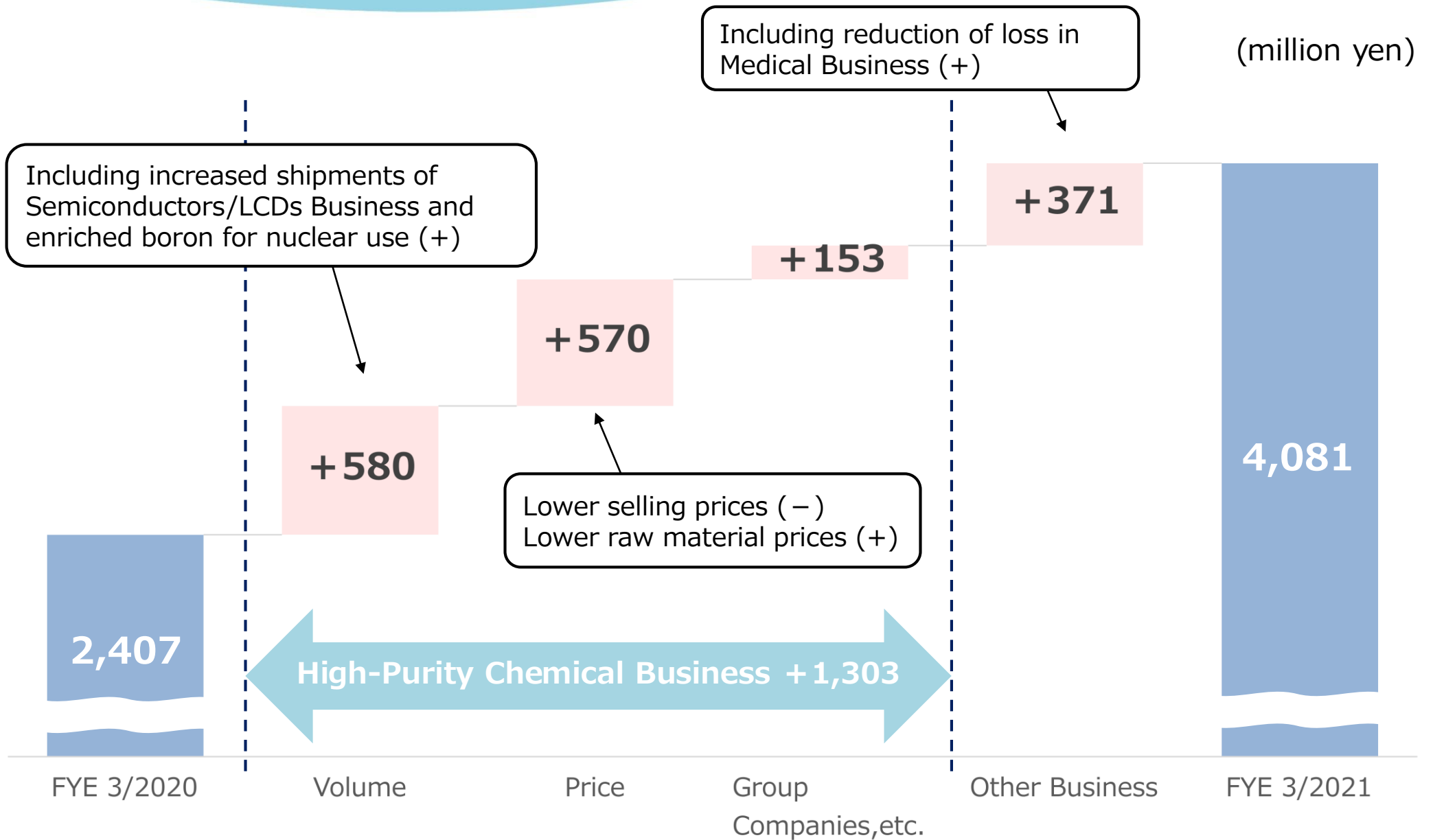
Sales Revenue Constituent Ratio of High-Purity Chemicals



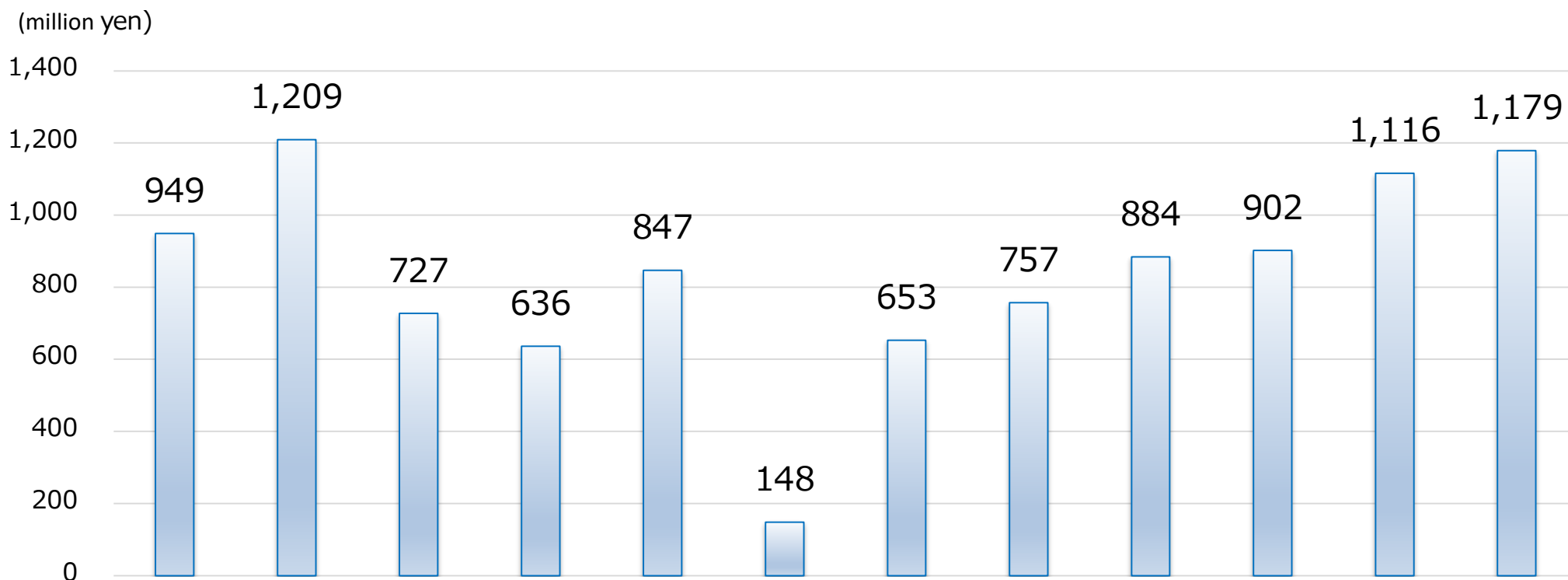
Semiconductors/LCDs Shipping Ratio by Country



# Analysis of Operating Profit (Year on year)



# Change of Quarterly Operating Profit



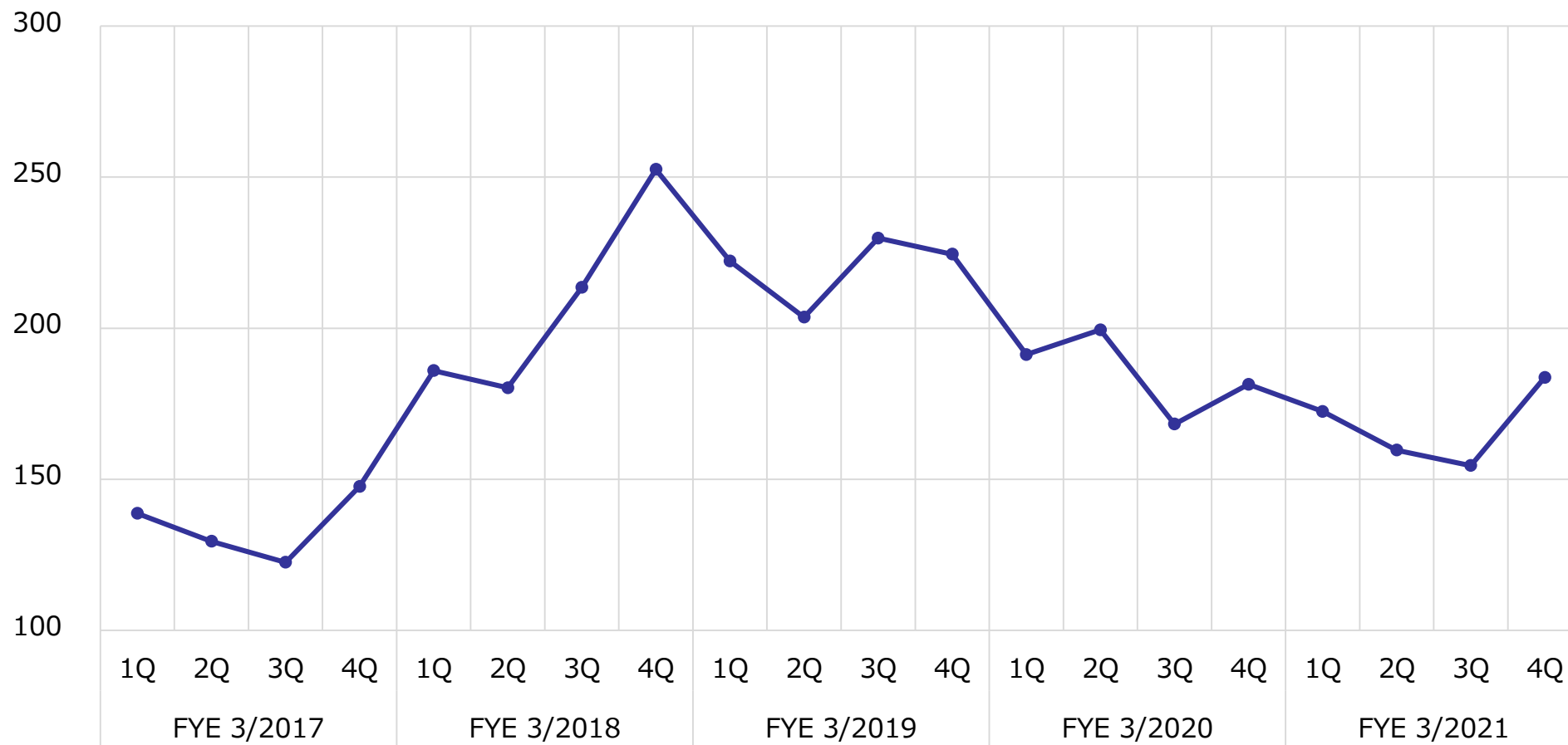
	FYE 3/2019				FYE 3/2020				FYE 3/2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Sales Revenue	10,134	9,323	9,275	9,649	9,733	7,406	7,591	8,998	8,222	8,389	8,315	7,965
Operating Profit	949	1,209	727	636	847	148	653	757	884	902	1,116	1,179
Operating Profit Margin	9.4%	13.0%	7.8%	6.6%	8.7%	2.0%	8.6%	8.4%	10.8%	10.8%	13.4%	14.8%



# Transitions in Trade Statistics Value of Anhydrous Hydrofluoric Acid



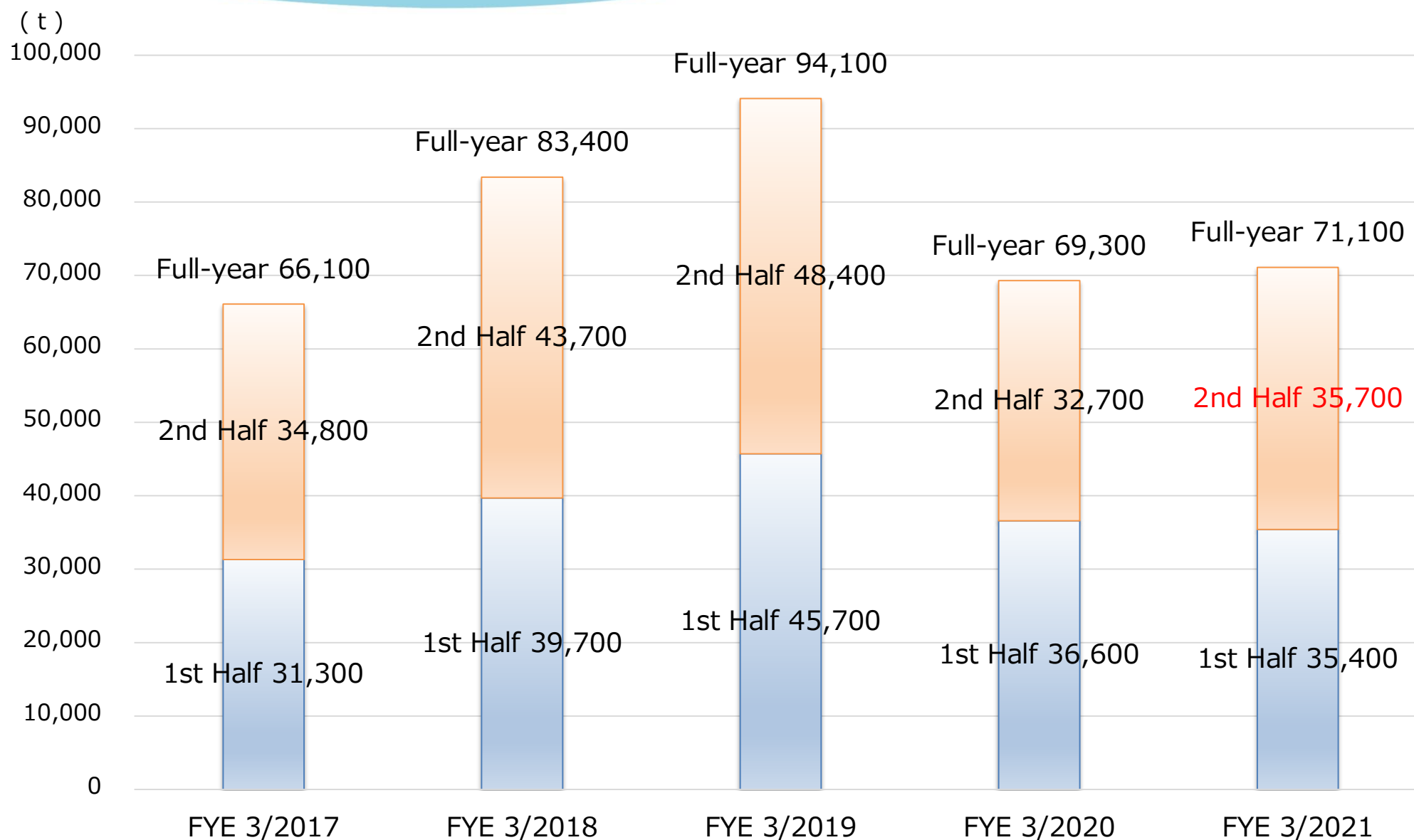
( yen/kg )



(yen/kg)	FYE 3/2017	FYE 3/2018	FYE 3/2019	FYE 3/2020	FYE 3/2021
Average Price	135	209	220	186	168

Source: Prepared by our company based on the Ministry of Finance's "Trade Statistics of Japan" (<http://www.customs.go.jp/toukei/info/>)

# Change of Shipping Volume of High-Purity Hydrofluoric Acid (Semiconductors and LCDs)

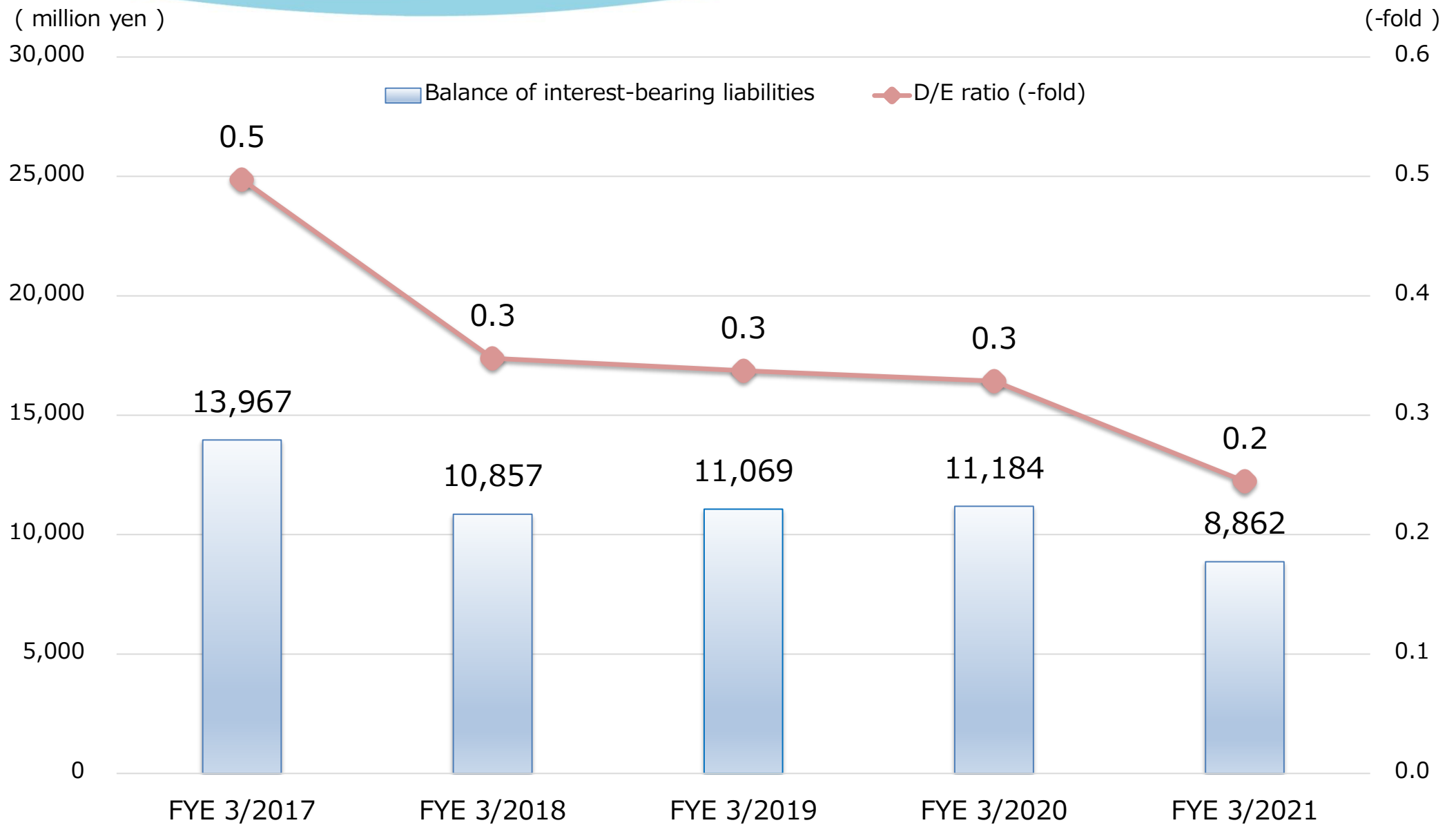


# Balance Sheet



(million yen)	FYE 3/2020 End-of-Year	FYE 3/2021 End-of-Year	Increase/ Decrease	Percentage Increase/ Decrease
Assets	<b>53,216</b>	<b>52,933</b>	<b>-282</b>	<b>-0.5</b>
Cash and deposits	13,591	15,568	1,976	14.5
Operating receivables	8,137	8,483	346	4.3
Inventory assets	5,495	4,872	-623	-11.3
Property, plant, and equipment	22,794	21,564	-1,230	-5.4
Intangible assets	655	516	-138	-21.1
Liabilities	<b>18,487</b>	<b>16,175</b>	<b>-2,311</b>	<b>-12.5</b>
Operating liabilities	3,310	3,026	-283	-8.6
Interest-bearing liabilities	11,184	8,862	-2,322	-20.8
Net Assets	<b>34,729</b>	<b>36,758</b>	<b>2,029</b>	<b>5.8</b>
Equity capital	34,033	36,220	2,187	6.4
Liabilities and Net Assets	<b>53,216</b>	<b>52,933</b>	<b>-282</b>	<b>-0.5</b>

# Interest-Bearing Liabilities and D/E Ratio



# Statement of Cash Flows Capital Expenditures, Depreciation & Amortization, Research & Development Expenses



(million yen)

## (1) Consolidated Statement of Cash Flows

	FYE 3/2020	FYE 3/2021
Cash Flows from Operating Activities	5,036	7,352
Cash Flows from Investing Activities	-3,173	-2,464
Free Cash Flows (Operating CF + Investment CF)	1,863	4,887
Cash Flows from Financing Activities	-715	-3,004
Net Increase (Decrease) in Cash and Cash Equivalents	1,133	1,954
Cash and Cash Equivalents, Beginning of Period	12,158	13,291
Cash and Cash Equivalents, End of Period	13,291	15,245

## (2) Capital Expenditures, Depreciation & Amortization, Research & Development Expenses

	FYE 3/2020	FYE 3/2021
Capital Expenditures	3,694	1,818
Depreciation & Amortization	3,236	3,039
Research & Development Expenses	1,513	793

# Financial Forecast



In line with the adoption of the revenue recognition standard from FYE3/2022, actual results for FYE3/2021 were calculated based on the assumption that the revenue recognition standard was applied to FYE3/2021. \*The same also applies to pages 15 and 16.

(million yen)	FYE 3/2021 Actual	FYE 3/2022 Forecast	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	32,561	33,000	438	1.3
Operating Profit	4,081	4,000	-81	-2.0
Ordinary Profit	4,020	4,000	-20	-0.5
Profit Attributable to Owners of Parent	2,959	3,000	40	1.4

Earnings Per Share (yen)	230.70	233.88
Dividend (yen)	47	50
ROE (%)	8.4	7.9

Capital Expenditures	1,818	1,920	101	5.6
Depreciation & Amortization	3,039	2,760	-279	-9.2
Research & Development Expenses	793	880	86	10.9

# Forecast on Sales Revenue and Operating Profit by Business Segment



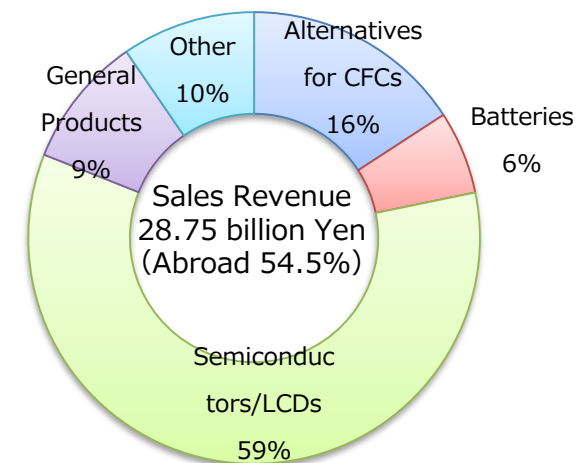
(million yen)	Sales Revenue				Operating Profit			
	FYE 3/2021 Actual	FYE 3/2022 Forecast	Increase/ Decrease		FYE 3/2021 Actual	FYE 3/2022 Forecast	Increase/ Decrease	
			Amount	%			Amount	%
High-Purity Chemical Business	28,073	28,750	676	2.4	4,201	4,450	248	5.9
Transportation Business	4,069	3,820	-249	-6.1	593	500	-93	-15.8
Medical Business	205	220	14	6.8	-644	-740	-95	-
Other	213	210	-3	-1.5	26	30	3	11.7
Eliminations and Corporate	-	-	-	-	-95	-240	-144	-
Total	32,561	33,000	438	1.3	4,081	4,000	-81	-2.0

# Forecast on Sales Revenue of High-Purity Chemical Business (Breakdown)

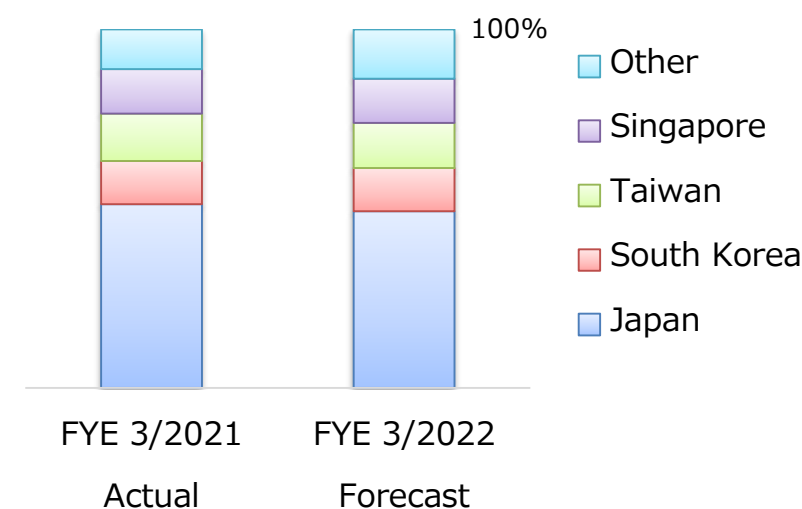


(million yen)	FYE 3/2021 Actual	FYE 3/2022 Forecast	Increase/Decrease	Percentage Increase/Decrease
Surface Treatment	947	560	-387	-40.9
Alternatives for CFCs	4,099	4,550	450	11.0
Batteries	2,364	1,710	-654	-27.7
Semiconductors/LCDs	16,283	17,030	746	4.6
Semiconductor Devices	696	630	-66	-9.5
Catalysts	852	970	117	13.8
Gypsum	175	140	-35	-20.2
General Products	2,067	2,710	642	31.1
Other	587	450	-137	-23.4
<b>Total</b>	<b>28,073</b>	<b>28,750</b>	<b>676</b>	<b>2.4</b>

Sales Revenue Constituent Ratio of High-Purity Chemicals



Semiconductors/LCDs Shipping Ratio by Country



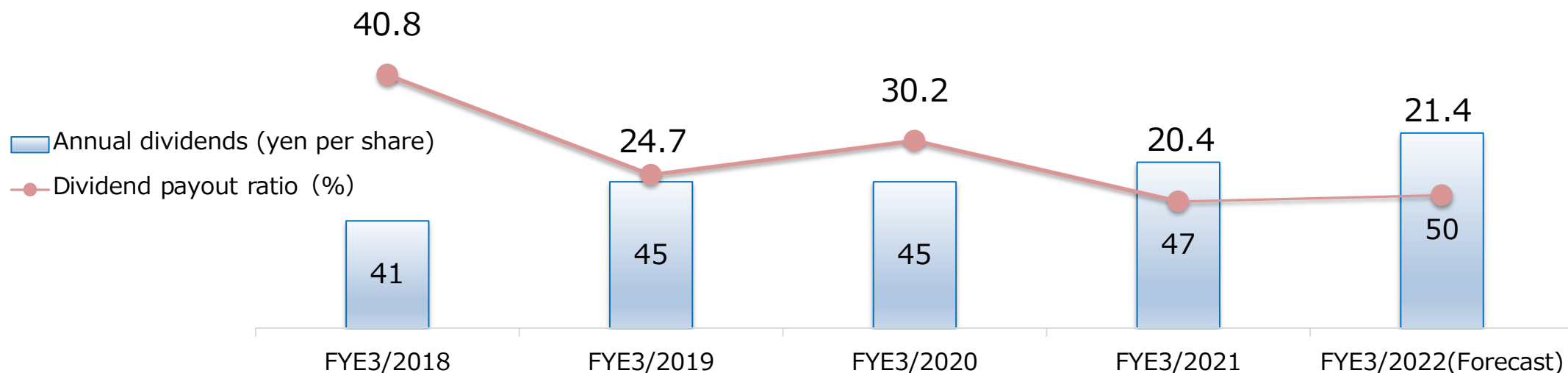


# Shareholder Return



Stella Chemifa's basic policy is to provide stable and continuous dividend payments, giving comprehensive consideration to factors including its financial condition and profit level. Retained earnings will be allocated to capital investment and R&D investment, and will be proactively utilized for future business development to enhance corporate value.

- ◆ FYE 3/2021
  - Annual dividend: 47 yen per share (2 yen increase compared to forecast)
  - The Company repurchased 100,000 of its own shares, worth 260 million yen.
- ◆ FYE 3/2022
  - Annual dividend forecast: 50 yen per share (3 yen increase compared to FYE 3/2021)




# Reference Material

(Corporate Profile • Introduction of Our Business)

# Corporate Profile



(as of March 31, 2021)

Corporate Name	STELLA CHEMIFA CORPORATION
Head Office	Meiji Yasuda Seimei Osaka Midosuji Bldg. 10F, 4-1-1 Fushimi-machi, Chuo-ku, Osaka City, Osaka
Founded/Established	February 1916 / February 1944
Capital Fund	4,829,782,512 yen
Representatives	Representative Director, President and Chief Executive Officer: Aki Hashimoto Representative Director, Senior Managing Executive Officer (Products Management Group): Kiyonori Saka
U R L	<a href="https://www.stella-chemifa.co.jp/english/">https://www.stella-chemifa.co.jp/english/</a> 
Number of Employees	297
Sales Department	Osaka Sales Department (Chuo-ku, Osaka city, Osaka) Tokyo Sales Department (Chiyoda-ku, Tokyo)
Factory	Sanpo Factory (Sakai-ku, Sakai City, Osaka) Izumi Factory (Izumiotu City, Osaka) Kitakyushu Factory (Yahatanishi-ku, Kitakyushu City, Fukuoka)

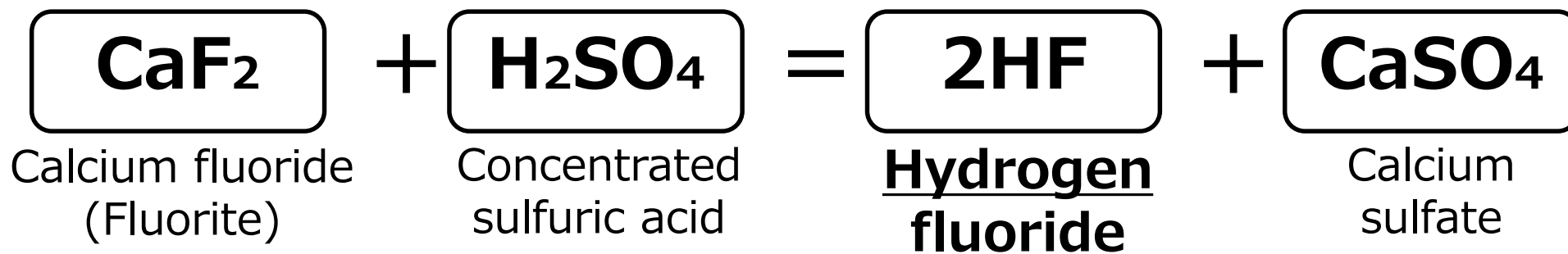
## At home (3 companies)

Transportation Business	BLUE EXPRESS, Inc.	Sakai-ku, Sakai City, Osaka
Other Business	BLUE AUTO TRUST Co., Ltd.	Sakai-ku, Sakai City, Osaka
Medical Business	STELLA PHARMA CORPORATION	Chuo-ku, Osaka city, Osaka

## Abroad (7 companies)

High-Purity Chemical Business	STELLA CHEMIFA SINGAPORE PTE LTD	Singapore
Transportation Business	STELLA EXPRESS (Singapore) PTE LTD	Singapore
High-Purity Chemical Business	Blue Express (Shanghai) International Trade Inc.	China
Transportation Business	Blue Express (Shanghai) International Freight Forwarding Co., Ltd.	China
High-Purity Chemical Business	Zhejiang Blue Star Chemical Co., Ltd.	China
High-Purity Chemical Business	FECT CO.,LTD	South Korea
High-Purity Chemical Business	Quzhou BDX New Chemical Materials Co., Ltd.	China

## Manufacture and applications of hydrogen fluoride



\* There are five main grades of fluorite purity, and for semiconductor applications, high quality fluorite with a purity of 97% or higher is required.

↓  
Concrete materials, etc.

Reaction and refinement using our proprietary technology

Treatment of surface such as stainless steel

Raw materials such as alternatives for CFCs

Etching agent for semiconductor liquid crystals

Materials for lithium-ion secondary batteries

Camera lens materials for semiconductor manufacturing equipment

Reaction catalyst  
Other products

## High-Purity Chemical Business

Surface Treatment	Manufacture and sale of chemicals used for acid cleaning of stainless steel and slimming of LCD panels
Alternatives for CFCs	Manufacture and sale of hydrofluoric anhydride, raw materials for CFCs and fluoropolymers
Batteries	Manufacture and sale of additives to improve the performance of lithium-ion secondary batteries
Semiconductors/LCDs	Manufacture and sale of chemicals for etching and cleaning in the semiconductor and LCD panel manufacturing processes
Semiconductor Devices	Manufacture and sale of raw materials for camera and stepper lenses, tantalum production aids for tantalum capacitors, etc.
Catalysts	Manufacture and sale of a range of chemicals and catalysts for the manufacture of pharmaceutical intermediates, etc.
Gypsum	Sale as raw material for concrete, etc. (Byproduct of hydrofluoric acid production)
General Products	Manufacture and sale of fluorine compounds for toothpaste, concentrated boron compounds, etc.
Other	Sales of purchased goods, etc.

# Introduction of Our Business

- Semiconductors/LCDs -



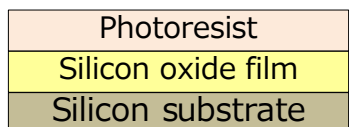
## Ultra-High Purification Technology

- Impurity levels of less than 1 ppt ( $1 \times 10^{-12}$ ) are controlled by ultra-purification and ultra-cleaning technologies
- Mass production of ultra-pure chemicals for ultra-high integrated circuit

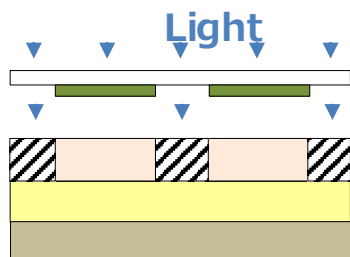
<p>Ultra High Purity Hydrofluoric Acid</p>	<ul style="list-style-type: none"> <li>• Hydrofluoric acid (HF) is the only chemical capable of etching out silicon oxide film</li> <li>• Chemical solutions are indispensable to the semiconductor manufacturing process and require ultra-high purity</li> <li>• In particular, dilute hydrofluoric acid is used in a number of semiconductor processes</li> </ul>
<p>Ultra High Purity Buffered Hydrofluoric Acid</p>	<ul style="list-style-type: none"> <li>• Mixed aqueous solution of hydrofluoric acid (HF) and ammonium fluoride (<math>\text{NH}_4\text{F}</math>)</li> <li>• Mainly used in processes such as etching and cleaning of insulation films</li> <li>• Chemicals with etch rates ranging from tens of <math>\text{\AA}/\text{min}</math> to thousands of <math>\text{\AA}/\text{min}</math> can be produced</li> </ul>

## Example of Application (Photolithography Process)

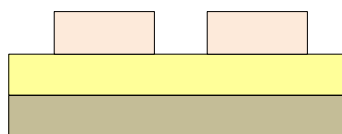
(1) Photoresist coating on silicon wafer (heat drying)



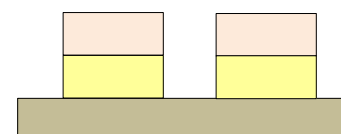
(2) Exposure



(3) Development



(4) Etching (Dissolve silicon oxide film with hydrofluoric acid chemicals)



(5) Photoresist stripping





# Introduction of Our Business

- Semiconductors/LCDs -



## Production capacity of High Purity Hydrofluoric Acid for Semiconductors

Kitakyushu Factory



Kitakyushu City, Fukuoka

**30,000 t /year**

Sanpo Factory



Sakai City, Osaka

**65,000 t /year**

STELLA CHEMIFA  
SINGAPORE



Singapore

**10,000 t /year**

**105,000 t /year**

\* As a comprehensive manufacturer of fluorine compounds, we use our own technology to do everything from manufacturing to filling.



# Introduction of Our Business

- Batteries -



## Additives

- Additive for electrolytic solution to improve the performance of lithium-ion secondary batteries
- High-temperature endurance · High conductivity · Increased capacity · Low resistance · Flame retardance

## Lithium Hexafluorophosphate

- High-purity electrolytes for lithium-ion secondary batteries

\* Manufacturing at our affiliate company in China (Maximum production capacity: 1,300 t/year)



Izumi Factory's manufacturing building (Izumiotu City, Osaka)

Example of materials used in lithium-ion secondary batteries

Additives

Positive and negative electrode

Separator

Current collector

Electrolyte

Binder

Protective IC

PTC element

## Action on the Development of Materials for the Next-Generation Battery

[Metal-ion secondary batteries]

High-purity electrolytes for sodium-ion secondary batteries (sodium hexafluorophosphate)

[All-solid secondary batteries]

Fluoride materials for all solid-state batteries

[Fluoride-ion secondary batteries]

Fluoride-ion conductor material



Quzhou BDX New Chemical Materials Co., Ltd. (China)



Enrichment plant  
(Izumiotu City, Osaka)

## Enriched Boron (Boron-10) and its features

- Natural boron is made up of two isotopes, boron-10(20%) and boron-11(80%)
- Developed technology to enrich boron-10 to over 99%
- Established mass production technology of enriched boron for the first time in Japan(2000)
- Boron-10 has an extremely high capacity to absorb neutrons, and further enriching it can increase its ability to absorb neutrons.

## Production capacity

Products		Production Capacity
Enriched Boron	$^{10}\text{B}$	6,000kg
Enriched Boric Acid	$\text{H}_3^{10}\text{BO}_3$	36,000kg
Enriched Potassium tetrafluoroborate	$\text{K}^{10}\text{BF}_4$	75,000kg

## Applications of Enriched Boron Compounds

- Neutron-absorbing material of spent nuclear fuel transportation and storage containers
- Material of control rods of nuclear reactors and rack material of spent nuclear fuel pools
- Excess reaction control of pressurized-water reactors by dissolving into primary cooling water
- Water source for facilities responding to specific major accidents, etc.
- Raw material for cancer treatment drugs (BNCT: Boron Neutron Capture Therapy)

## Advantages of Using Enriched Boric Acid

- (1) Improvement of corrosive environment in nuclear reactors  
Required  $^{10}\text{B}$  concentration can be secured at 1/5 of natural products.  
Operation at low concentration is possible, and corrosion in facilities can be reduced.
- (2) Reduction of storage costs  
Heat retention are required to maintain the dissolution of boric acid water.  
Enriched boric acid realizes the reduction in concentration, and reduces the problem of heat retention.  
In addition, the storage tank can be made smaller.
- (3) More reliable control  
In the event of an emergency stop, more reliable control is possible, and since boric acid is harmful to the human body and the environment, the reduction of overall amount of boric acid is an advantage.

## Tin Fluoride

- 2017  
The GMP inspection by USFDA for tin fluoride, an active ingredient of OTC anticaries drugs, was completed, and obtained official approval.
- 2018  
Started marketing of “tin fluoride” as a GMP-compliant product.



Izumi Factory's manufacturing building  
(Izumiotu City, Osaka)



### <Actions of fluorine on teeth>

- To suppress Streptococcus mutans from producing acid (Cavity prevention)
  - To promote tooth remineralization
  - To form acid-resistant teeth (to form fluorapatite)
- \* We expect to see big demand mainly in Europe and the US, where there is strong interest in dental health and beauty.

---

#### \* What is FDA?

FDA stands for Food and Drug Administration in the U.S.  
(A public agency, similar in function to the Ministry of Health, Labour and Welfare in Japan)

#### \* What is GMP?

It stands for “Good Manufacturing Practice”, which refers to a common standard for manufacturing and quality control of drugs and quasi-drugs.



# Introduction of Our Business

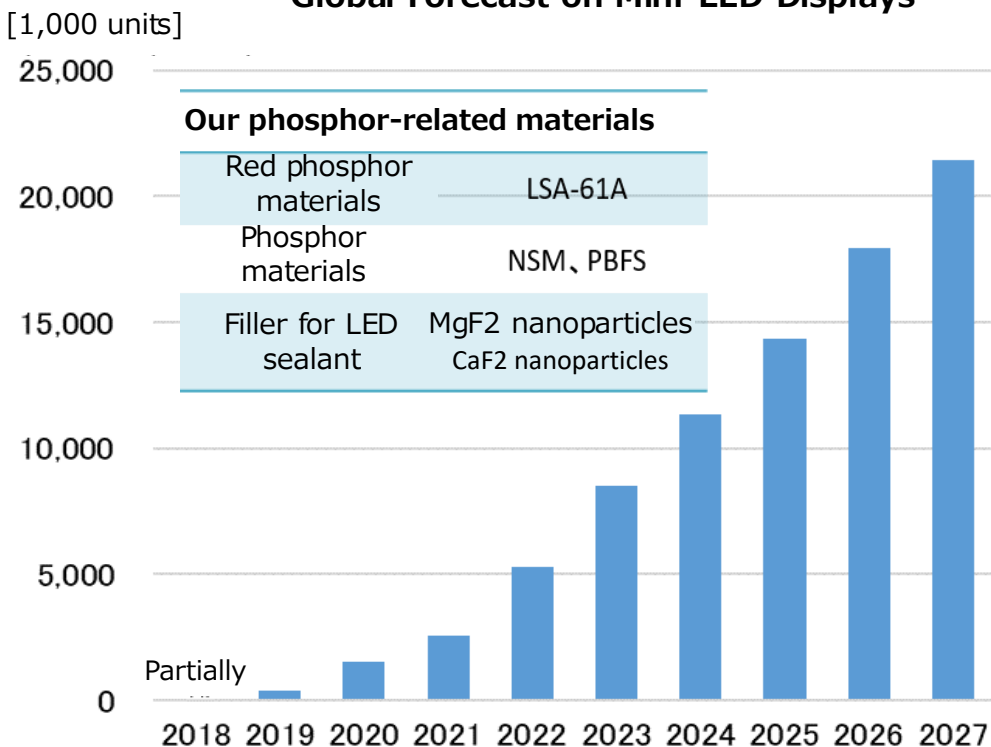
- New Initiatives -



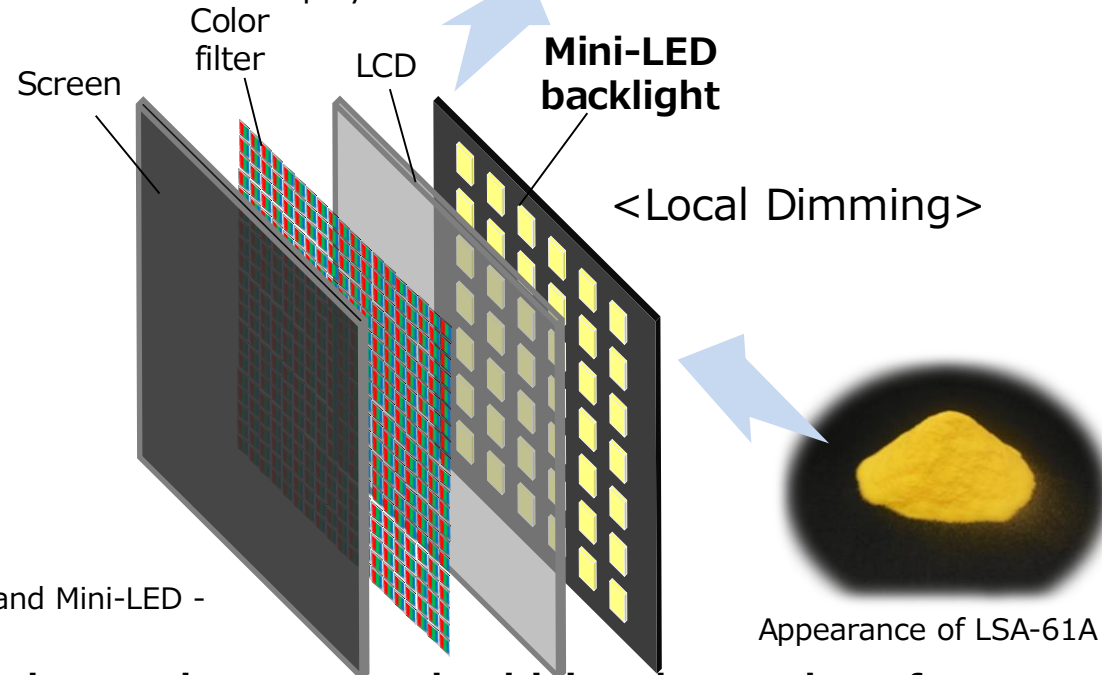
## Phosphor-related Materials

- Development of highly efficient and long-life fluoride phosphor materials using our core technologies
- Use of the materials is expected to increase in display applications such as mini-LED

Global Forecast on Mini-LED Displays



Source: Yano Research Institute  
2019 LED Display Market and Future Prospects - Focusing on Micro LED and Mini-LED -



**Mini-LED is expected to be adopted for in-vehicle displays and meter panels, driving the number of mini-LED displays installed**

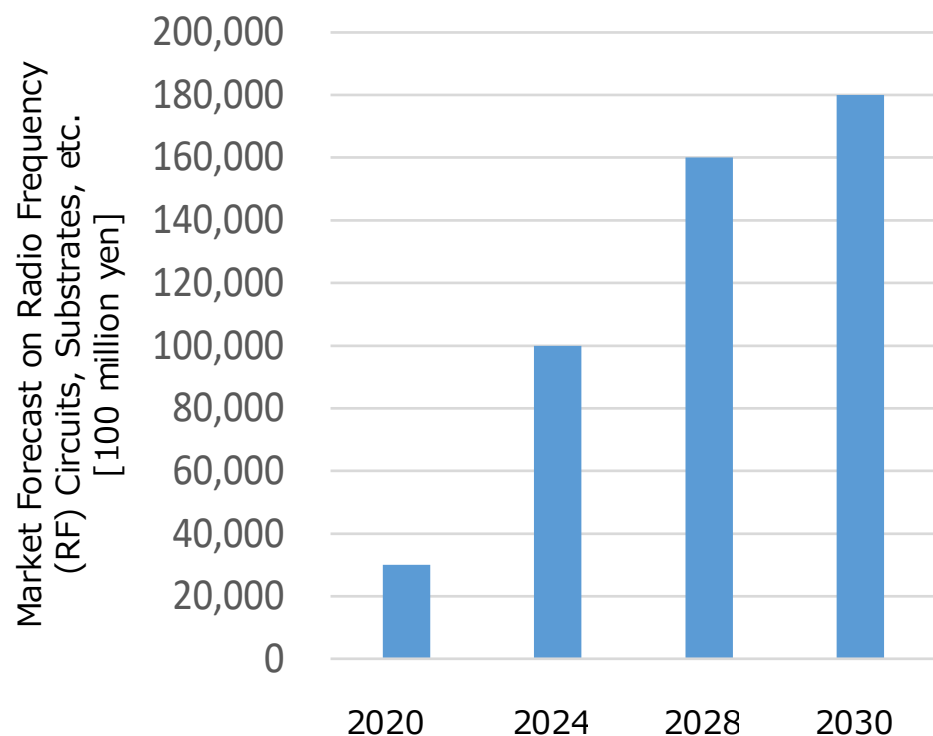
# Introduction of Our Business

- New Initiatives -

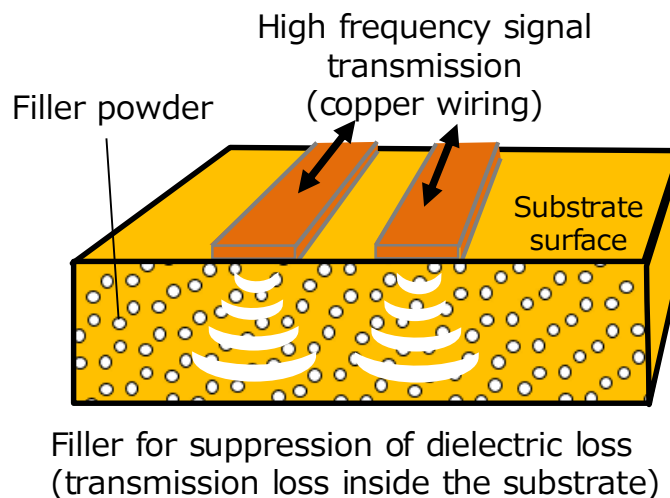


## PCB Materials (Low Dielectric Constant Materials)

- As materials for high-frequency communication devices, used as additives (fillers) to resin and other materials for substrates.
- Contribute to suppression of signal transmission loss, miniaturization of devices, and suppression of power consumption.



Source: Yano Research Institute  
Market Forecast on 5G High-frequency Circuits, Substrates, etc.



Electronic substrate built in high-speed communication devices



Appearance of developed filler

Low dielectric constant  
Low dielectric tangent

# Introduction of Our Business

- Other product examples -



(Product information)

## Optical Material-Related

- ◆ Calcium Fluoride
- ◆ Magnesium Fluoride
- ◆ Aluminum Fluoride
- ◆ Lead Fluoride
- ◆ Lithium Fluoride
- ◆ Strontium Fluoride
- ◆ Barium Fluoride

## Reactive Catalyst-Related

- ◆ High Purity Boron Trifluoride
- ◆ Boron Trifluoride n-Butyl Ether
- ◆ Boron Trifluoride Monoethyl Amine
- ◆ Boron Trifluoride Diethyl Ether
- ◆ Boron Trifluoride Tetrahydrofuran
- ◆ Boron Trifluoride Piperidine
- ◆ Boron Trifluoride Dimethyl Ether
- ◆ Boron Trifluoride Phenol
- ◆ Triethylamine 3HF

## Surface Treatment, Alternatives for CFCs-Related

- ◆ Anhydrous Hydrofluoric Acid
- ◆ 55% Hydrofluoric Acid

## Nuclear Energy-Related

- ◆  $^{10}\text{B}$  Enriched Potassium Fluoroborate
- ◆  $^{10}\text{B}$  Enriched Boric Acid

## Other Products

- ◆ Fluorosilicic Acid
- ◆ Copper Fluoroborate
- ◆ Potassium Fluoroborate
- ◆ Potassium Fluoride
- ◆ Potassium Hexafluorotitanate
- ◆ Potassium Fluorosilicate
- ◆ Lead Fluoroborate
- ◆ Ammonium Hydrogenfluoride
- ◆ Ammonium Fluoride
- ◆ Refined Calcium Fluoride
- ◆ Fluoroboric Acid
- ◆ Zinc Fluoroborate
- ◆ Potassium Hexafluorozirconate
- ◆ Potassium Hexafluorophosphate
- ◆ Tin Fluoroborate
- ◆ Sodium Fluoroborate
- ◆ Sodium Fluoride

## Newly-Developed Products

- ◆ Detergents Contributing to Increase in Chemical Lifetime
- ◆ Detergents Inhibiting Silicon and Polysilicon Damage
- ◆ Battery-Related (Ionic Liquids, Additives for Lithium-Ion Batteries, ...etc)
- ◆ Various Fluoride Nanoparticles Dispersant (Magnesium, Lithium, Ytterbium, Calcium)
- ◆ Nuclear Energy Industry
- ◆ Special-Purpose Inorganic Fluorine Compounds
- ◆ Detergents Suppressing Etching of Silicon Nitride Film
- ◆ Phosphor materials
- ◆ 5G/6G (Information Communication Systems), Printed Circuit Board
- ◆ Fluorinated Carbon Nano-Tubes



# Introduction of Our Business

くらしのなかの

ステラケミファ



\* For details, please visit the website.

## 街のなかでもステラケミファ



## 家のなかでもステラケミファ



## 病院のなかでもステラケミファ



## 学校のなかでもステラケミファ





# Introduction of Our Business

- Transportation Business -



(HP URL)

BLUE EXPRESS, Inc.

## Transportation Business

T r a n s p o r t	Land transport · Marine transport · Rail transport
C u s t o m s C l e a r a n c e	Customs clearance · Loading and Unloading
W a r e h o u s i n g	Providing multi-functional warehouses fully equipped with the latest systems
C o n t a i n e r s e r v i c e s	Supplying large and pressurized containers that meet ISO specifications, medium-size IBC pressurized containers, as well as IBC containers with UN specifications, and also offering services for cleaning, repairing and leasing the containers

Customs clearance sites	Shipping terminals	Overseas Bases
Ohama Office	Sendai Office	Singapore
Osaka Office	Kanto Office	China(Shanghai)
Yokohama Office	Yokohama Office	
	Shimizu Office	
	Nagoya Office	
	Ohama Office	
	Kobe Office	
	Kitakyushu Office	



# Introduction of Our Business

- Medical Business -



(HP URL)

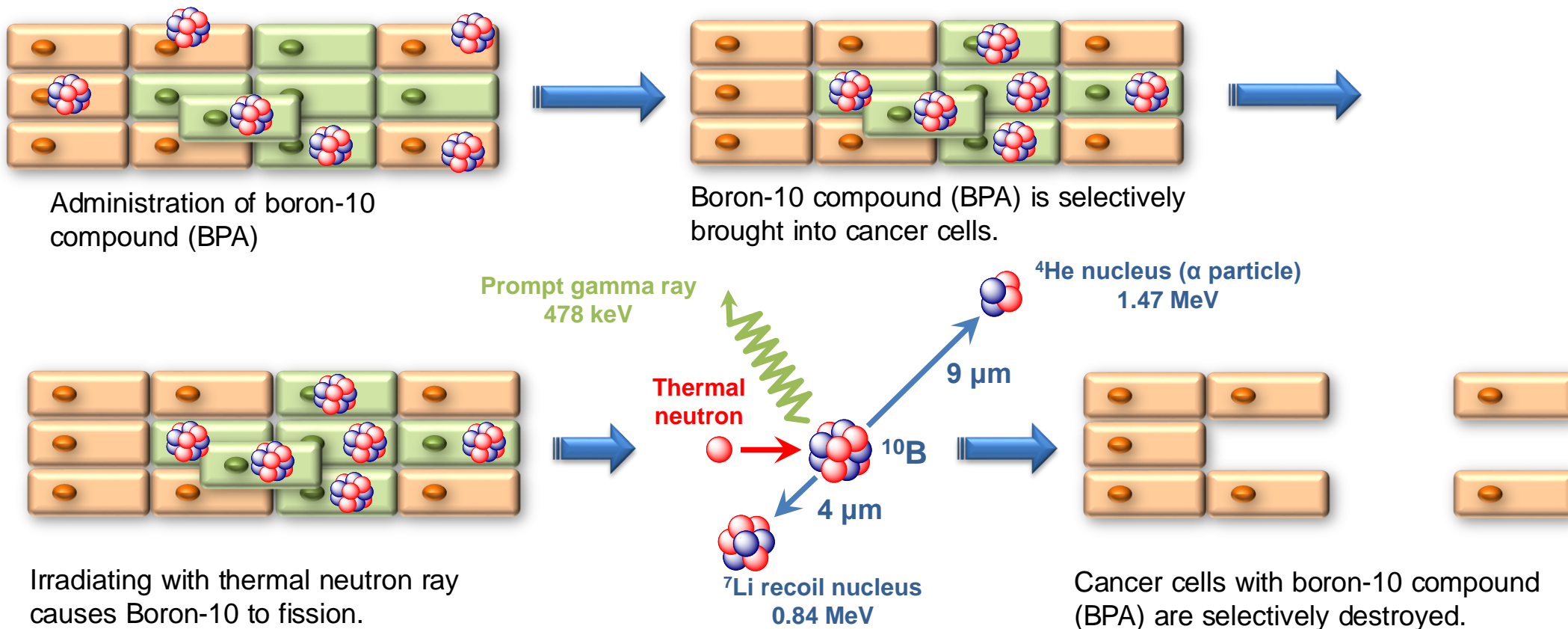
STELLA PHARMA CORPORATION

## Principle of Boron Neutron Capture Therapy (BNCT)

Boron Neutron Capture Therapy (Boron Neutron Capture Therapy : BNCT)

### Mechanism of BNCT

A particle beam treatment that selectively destroys cancer cells by using the nuclear fission reaction between boron (Boron-10) and thermal neutrons produced by injecting a boron agent into cancer cells and irradiating the affected area with neutrons from outside the body.



**\* This image was prepared to illustrate the mechanism of BNCT. In the actual therapy, the details differ.**

## Features of Boron Neutron Capture Therapy (BNCT)

<b>Effectiveness</b>	<ul style="list-style-type: none"> <li>• Achieves a high response rate in the area of head and neck cancer (71.4%)</li> <li>• Selectively destroys cancer cells</li> <li>• Expected to be effective against highly infiltrating cancer</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Less damage to adjacent normal tissue</li> </ul>
<b>Benefits for patients</b>	<ul style="list-style-type: none"> <li>• Short treatment period</li> <li>• Low invasiveness</li> <li>• Can be used for recurrent cancer after X-ray treatment</li> </ul>

Item		X-ray *3	Proton *4	Heavy-particle *5	<b>BNCT</b>
Medical treatment (Head and neck cancer *1)	Number of radiation sessions	35 sessions	32 sessions	16 sessions	<b>1 session</b>
	Treatment period	7 weeks	7 weeks	4 weeks	<b>1 day</b>
Therapeutic effect	Cancer cell killing power *2	1	1.1	3	<b>3 or more</b>

\*1: For X-ray, proton and heavy-iron, the data indicates the typical number of radiation sessions and treatment period required.

\*2: The data indicates RBE (Relative Biological Effectiveness) for X-ray, proton and heavy particle and CBE (compound Biological Effectiveness) for BNCT.

\*3: Japan Society for Head and Neck Cancer Website: [http://www.jshnc.umin.ne.jp/general/section\\_05.html](http://www.jshnc.umin.ne.jp/general/section_05.html)

\*4: Kobe Proton Center website: [https://www.kobe-pc.jp/disease\\_1.html](https://www.kobe-pc.jp/disease_1.html)

\*5: QST Hospital website: <https://www.nirs.qst.go.jp/hospital/radiotherapy/explanation/doctor06.php>

# Introduction of Our Business

- Medical Business -



## Boron drug for BNCT "Steboronine"



Antineoplastic drug Steboronine Intravenous Drip Bag 9000 mg/300 mL

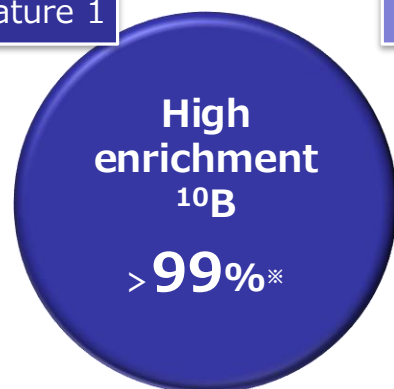
(Approval No. : 30200AMX00438000)

May, 2020 Launch

[Regulatory category] Prescription drug \*Use by prescription from a physician, etc.

[Indications] Unresectable, locally advanced or locally recurrent Head and Neck cancer

Feature 1



\*in-house standard

Feature 2

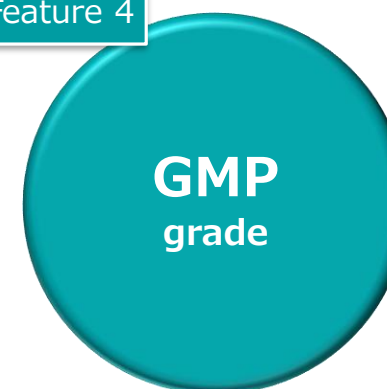


Feature 3



Storage: to be stored at 2-8 degrees Celsius

Feature 4



### Efforts to Expand the Indications

Brain tumor  
(recurrent malignant glioma)

A phase II study is underway.  
(Under the consultation of the Prioritized Review System for innovative medicines  
[SAKIGAKE Designation System])

Melanoma/angiosarcoma

A phase I clinical study is underway.

Recurrent high-grade  
meningioma

A physician-led phase II study is underway.  
(Provision of an investigational drug)

## Upcoming Efforts to Increase Use of BNCT

Increasing  
number of  
BNCT facilities



Increasing  
number of  
indications

Strategy 1

Enhance the recognition of BNCT as a **new treatment modality** with higher response rates to ensure quality of life (QOL) of patients

Strategy 1

Focus on diseases for which Stella Pharma has a proven experience in reactor research to **increase the certainty of development success**

Strategy 2

**Partner with various accelerator manufacturers**

Strategy 2

Take advantage of Stella Pharma's expertise of cell-selective radiotherapy to **focus on Unmet Medical Needs**

Strategy 3

Effectively use the existing approvals given to drugs for head and neck cancer in Japan **for the acquisition of drug application approvals overseas**

Strategy 3

Simultaneously develop PET drugs to **accelerate the expansion of indications**