

# Financial Results for FYE 3/2018

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Securities code: 4109

# 1. Financial Results for FYE 3/2018

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- Basic Financial Data (Consolidated)
- Consolidated Statement of Income
- Non-operating Profit and Loss/Extraordinary Profit and Loss
- Sales Revenue and Operating Profit by Business
- Quarterly Operating Profit
- Consolidated Balance Sheet
- Consolidated Cash Flows, Capital Expenditures, Depreciation & Amortization, Research & Development Expenses

## <Basic Financial Data (Consolidated)>

\* Announced February 9, 2018

(In millions of yen)	FYE 3/2018		FYE 3/2017	YoY		Vs. Forecast	
	Actual	Forecast*	Actual	Increase/ Decrease	Percentage Increase/ Decrease	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	33,622	33,400	29,850	3,772	12.6	222	0.7
Operating Profit	2,369	2,100	4,372	-2,002	-45.8	269	12.9
Ordinary Profit	1,756	1,900	4,154	-2,397	-57.7	-143	-7.6
Profit Attributable to Owners of Parent	1,274	1,400	2,824	-1,549	-54.9	-125	-9.0

(In millions of yen)	FYE 3/2018	FYE 3/2017	Increase/ Decrease
Total Assets	51,388	52,081	-693
Equity Capital	31,233	28,078	3,154
Interest-bearing Liabilities	10,857	13,967	-3,109

## <Consolidated Statement of Income>

(In millions of yen)	FYE 3/2018	FYE 3/2017	YoY	
			Increase/ Decrease	Percentage Increase/ Decrease
<b>Sales Revenue</b>	33,622	29,850	3,772	12.6
<b>Gross Profit</b>	6,592	8,199	-1,607	-19.6
<b>Gross Profit Margin (%)</b>	19.6	27.5	-	-
<b>SG&amp;A</b>	4,222	3,826	395	10.3
<b>Operating Profit</b>	2,369	4,372	-2,002	-45.8
<b>Operating Profit Margin (%)</b>	7.0	14.6	-	-
<b>Ordinary Profit</b>	1,756	4,154	-2,397	-57.7
<b>Profit before Income Taxes</b>	1,803	3,815	-2,012	-52.7
<b>Profit Attributable to Owners of Parent</b>	1,274	2,824	-1,549	-54.9

## <Non-operating Profit and Loss/Extraordinary Profit and Loss>

### ■ Non-operating Profit and Loss

	FYE 3/2018	FYE 3/2017
(In millions of yen)		
<b>Non-operating Profit</b>	<b>109</b>	<b>438</b>
Interest income	14	13
Dividend income	2	2
Gain on valuation of derivatives	-	282
Other	92	139
<b>Non-operating Expenses</b>	<b>722</b>	<b>657</b>
Interest expenses	39	52
Share of loss of entities accounted for using equity method	120	5
Foreign exchange losses	214	417
Loss on valuation of derivatives	186	-
Other	162	181

### ■ Extraordinary Profit and Loss

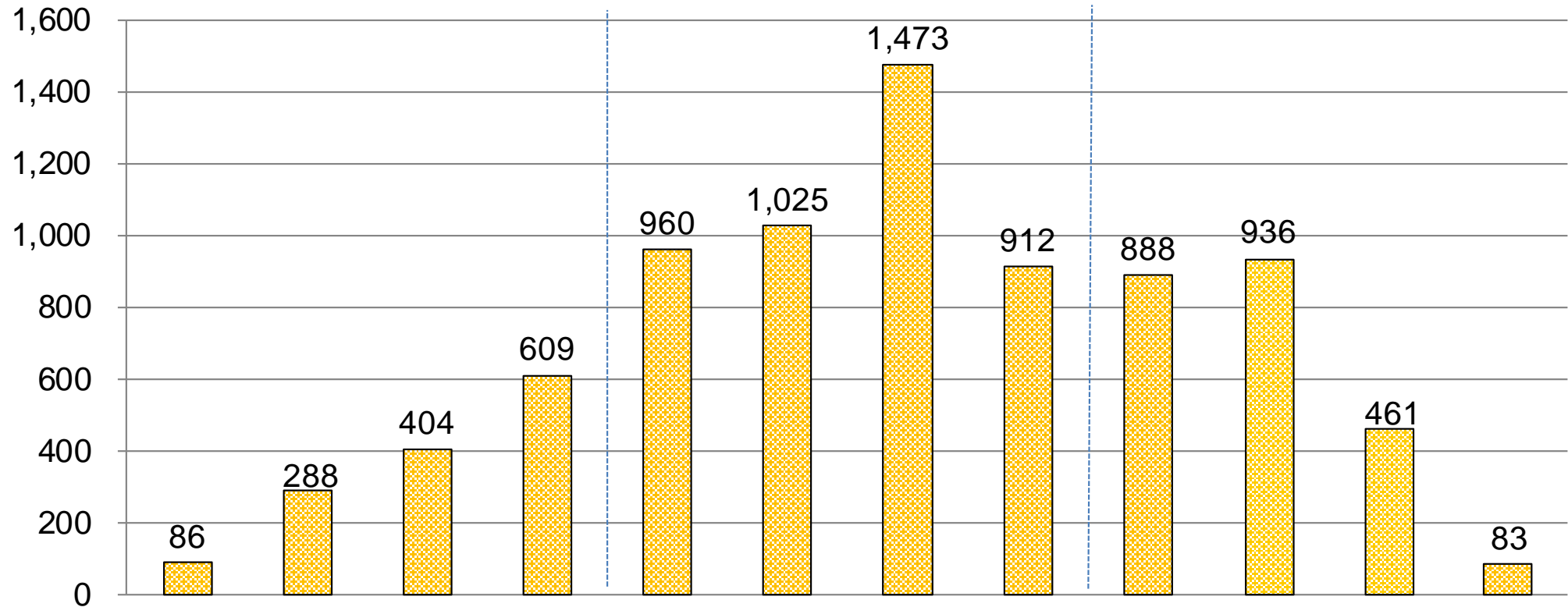
	FYE 3/2018	FYE 3/2017
(In millions of yen)		
<b>Extraordinary Profit</b>	<b>285</b>	<b>31</b>
Gain on sales of non-current assets	285	31
<b>Extraordinary Losses</b>	<b>238</b>	<b>369</b>
Loss on abandonment of non-current assets	206	271
Loss on sales of non-current assets	0	0
Impairment loss	-	98
Loss on sales of investment securities	-	0
Loss on valuation of investment securities	32	-

## <Sales Revenue and Operating Profit by Business>

(In millions of yen)		FYE 3/2018		FYE 3/2017		Percentage Increase/ Decrease	
		Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
<b>High-purity Chemical Business</b>		<b>29,145</b>	<b>2,500</b>	<b>25,501</b>	<b>4,422</b>	<b>14.3</b>	<b>-43.5</b>
[High-purity Chemical Business: Breakdown]	Surface Treatment	1,956		2,033		-3.8	
	Alternatives for CFCs	2,546		2,463		3.4	
	Batteries	5,069		5,072		-0.1	
	Semiconductors/LCDs	15,662		12,310		27.2	
	Semiconductor Devices	693		527		31.3	
	Catalysts	919		854		7.6	
	Gypsum	72		94		-23.1	
	General products	1,267		1,342		-5.6	
	Other	958		803		19.4	
<b>Transportation Business</b>		<b>4,269</b>	<b>779</b>	<b>4,143</b>	<b>698</b>	<b>3.0</b>	<b>11.6</b>
<b>Medical Business</b>		<b>-</b>	<b>-960</b>	<b>-</b>	<b>-792</b>	<b>-</b>	<b>-</b>
<b>Other</b>		<b>207</b>	<b>34</b>	<b>204</b>	<b>30</b>	<b>1.5</b>	<b>11.8</b>

# <Quarterly Operating Profit>

(In millions of yen)



	FYE 3/2016				FYE 3/2017				FYE 3/2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Sales Revenue	6,745	7,057	6,789	6,918	7,187	6,757	7,941	7,963	8,159	8,561	8,314	8,587
Operating Profit	86	288	404	609	960	1,025	1,473	912	888	936	461	83
Operating Profit Margin	1.3%	4.1%	6.0%	8.8%	13.4%	15.2%	18.6%	11.5%	10.9%	10.9%	5.5%	1.0%

## <Consolidated Balance Sheet>

(In millions of yen)	FYE 3/2018	FYE 3/2017	Increase/ Decrease
<b>Current Assets</b>	<b>26,324</b>	<b>28,069</b>	<b>-1,745</b>
Cash and Deposits	9,192	14,361	-5,169
Notes and Accounts Receivable - trade	9,753	7,867	1,885
<b>Non-current Assets</b>	<b>25,063</b>	<b>24,011</b>	<b>1,051</b>
Property, Plant and Equipment	21,654	22,072	-418
Intangible Assets	144	129	14
Investments and Other Assets	3,265	1,808	1,456
<b>Current liabilities</b>	<b>10,617</b>	<b>12,566</b>	<b>-1,949</b>
Short-term Loans Payable	1,860	2,320	-460
Long-term Loans Payable within 1 year	2,794	3,684	-889
<b>Non-current liabilities</b>	<b>8,285</b>	<b>9,998</b>	<b>-1,712</b>
Bonds Payable	-	2,000	-2,000
Long-term Loans Payable	6,203	5,962	241
<b>Net Assets</b>	<b>32,485</b>	<b>29,516</b>	<b>2,968</b>
Shareholders' Equity	30,768	27,771	2,996
<b>Liabilities and Net Assets</b>	<b>51,388</b>	<b>52,081</b>	<b>-693</b>



## <Consolidated Cash Flows, Capital Expenditures, Depreciation & Amortization, Research & Development Expenses>

### (1) Consolidated Statement of Cash Flows

(In millions of yen)	FYE 3/2018	FYE 3/2017
Cash flows from operating activities (*1)	937	5,341
Cash flows from investing activities (*2)	-4,673	-1,814
Free Cash Flows (*1 + *2)	-3,735	3,526
Cash flows from financing activities	-1,400	531
Net increase (decrease) in cash and cash equivalents	-5,238	4,014
Cash and cash equivalents, beginning of year	14,169	10,154
Cash and cash equivalents, end of year	8,930	14,169

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

(In millions of yen)	FYE 3/2018	FYE 3/2017
Capital Expenditures	2,991	2,328
Depreciation & Amortization	3,344	3,117
Research & Development Expenses	1,484	1,274

## 2. Financial Forecast for FYE 3/2019

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- Financial Forecast
- Forecast by Segment

## <Financial Forecast>

(In millions of yen)	FYE 3/2019 Full-year forecast	FYE 3/2018 Full-year results	FYE 3/2017 Full-year results
Sales Revenue	37,700	33,622	29,850
Operating Profit	2,600	2,369	4,372
Ordinary Profit	2,800	1,756	4,154
Profit Attributable to Owners of Parent	1,700	1,274	2,824
Current Net Profit Per Share (yen)	131.65	100.49	234.56
Capital Expenditures	3,983	2,991	2,328
Depreciation & Amortization	3,414	3,344	3,117
Research & Development Expenses	1,629	1,484	1,274

## <Financial Forecast by Segment>

(In millions of yen)		FYE 3/2019 Full-year forecast		FYE 3/2018 Full-year results		FYE 3/2017 Full-year results	
		Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
<b>High-purity Chemical Business</b>		<b>33,110</b>	<b>2,930</b>	<b>29,145</b>	<b>2,500</b>	<b>25,501</b>	<b>4,422</b>
[High-purity Chemical Business: Breakdown]	Surface Treatment	2,110		1,956		2,033	
	Alternatives for CFCs	3,080		2,546		2,463	
	Batteries	4,700		5,069		5,072	
	Semiconductors/LCDs	19,240		15,662		12,310	
	Semiconductor Devices	600		693		527	
	Catalysts	920		919		854	
	Gypsum	80		72		94	
	General products	1,650		1,267		1,342	
	Other	730		958		803	
<b>Transportation Business</b>		<b>4,380</b>	<b>680</b>	<b>4,269</b>	<b>779</b>	<b>4,143</b>	<b>698</b>
<b>Medical Business</b>		<b>-</b>	<b>-1,050</b>	<b>-</b>	<b>-960</b>	<b>-</b>	<b>-792</b>
<b>Other</b>		<b>210</b>	<b>30</b>	<b>207</b>	<b>34</b>	<b>204</b>	<b>30</b>

## 3. STELLA CHEMIFA CORPORATION

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- Corporate Profile/Sales Office Locations/Plant Locations  
(as of March 31, 2018)
- List of Affiliated Companies
- High-purity Chemical Business

## <Corporate Profile/Sales Office Locations/Plant Locations (as of March 31, 2018)>

### ◆ Corporate profile

Corporate name: STELLA CHEMIFA CORPORATION  
 Head Office: Meiji Yasuda Seimei Osaka Midosuji Bldg. 10F,  
 4-1-1 Fushimi-machi, Chuo-ku, Osaka  
 Founded February 1916  
 Established February 1944  
 Capital fund 4,829,782,512 yen  
 Representatives Chairperson, Representative Director:  
 Junko Fukada  
 President, Representative Director:  
 Aki Hashimoto  
 URL <http://www.stella-chemifa.co.jp/>



### ◆ Sales office

Osaka Sales Department Meiji Yasuda Seimei Osaka Midosuji Bldg. 10F,  
 4-1-1 Fushimi-machi, Chuo-ku, Osaka  
 Tokyo Sales Department Tokyo Tatemono Yaesu Building 2F, 1-4-16 Yaesu, Chuo-ku, Tokyo

### ◆ Factory addresses

Sanpo Factory 7-227 Kaisan-cho, Sakai-ku, Sakai  
 Izumi Factory 1-41 Rinkai-cho, Izumiotsu  
 Kitakyushu Factory 1-1 Kurosakishiroishi, Yahatanishi-ku, Kitakyushu

## <List of Affiliated Companies>

Base	Logo	Corporate Name	Business Segment	Head Office:
At home		STELLA CHEMIFA CORPORATION	High-purity Chemical Business	Chuo-ku, Osaka
		Blue Express, Inc.	Transportation Business	Sakai-ku, Sakai
		Blue Auto Trust Co., Ltd.	Other Business	Sakai-ku, Sakai
		Stella Pharma Corporation	Medical Business	Chuo-ku, Osaka
Abroad		STELLA CHEMIFA SINGAPORE PTE LTD	High-purity Chemical Business	Singapore
		STELLA EXPRESS PTE LTD	Transportation Business	Singapore
		Blue Express (Shanghai) International Trade Inc.	High-purity Chemical Business	China
		Blue Express (Shanghai) International Freight Forwarding Co., Ltd.	Transportation Business	China
		Zhejiang Blue Star Chemical Co., Ltd.	High-purity Chemical Business	China
		FECT Co., Ltd.	High-purity Chemical Business	South Korea
		Quzhou BDX New Chemical Materials Co., Ltd.	High-purity Chemical Business	China

## < Manufacture and Sale of High-purity Chemical Products >

Our products, fluorine compounds, have continued to be used in the manufacturing process of various products.

Segment name	Main product	Applications
Surface treatment	Hydrofluoric acid for industrial use	Used for acid cleaning of stainless steel and for thinning glass substrates for LCDs
Alternatives for CFCs	Anhydrous hydrofluoric acid	Material for chlorofluorocarbon and fluorine resin
Batteries	Lithium hexafluorophosphate	Electrolyte for electrolytic solution of lithium-ion secondary batteries
Semiconductors and LCDs	High-purity hydrofluoric acid	Cleaning solution for silicon wafers and LCDs Solar batteries
	High-purity buffered hydrofluoric acid	
Semiconductor devices	High-purity fluoride (CaF <sub>2</sub> , PbF <sub>2</sub> , MgF <sub>2</sub> , AlF <sub>3</sub> and others)	Lens material for i-line steppers and cameras
	Potassium fluoride	Auxiliary agent for manufacturing tantalum for tantalum capacitors
General products	Tin fluoride	Quasi-drug



# Semiconductors and LCDs

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- Features of our products and new products
- Result and Forecast of world semiconductor market scale by product
- Development of a new memory market
- Maintenance and strengthening of quality edge
- Change of shipping volume of high-purity hydrofluoric acid (semiconductors and LCDs)
- Boosting Production of Semiconductor Chemicals

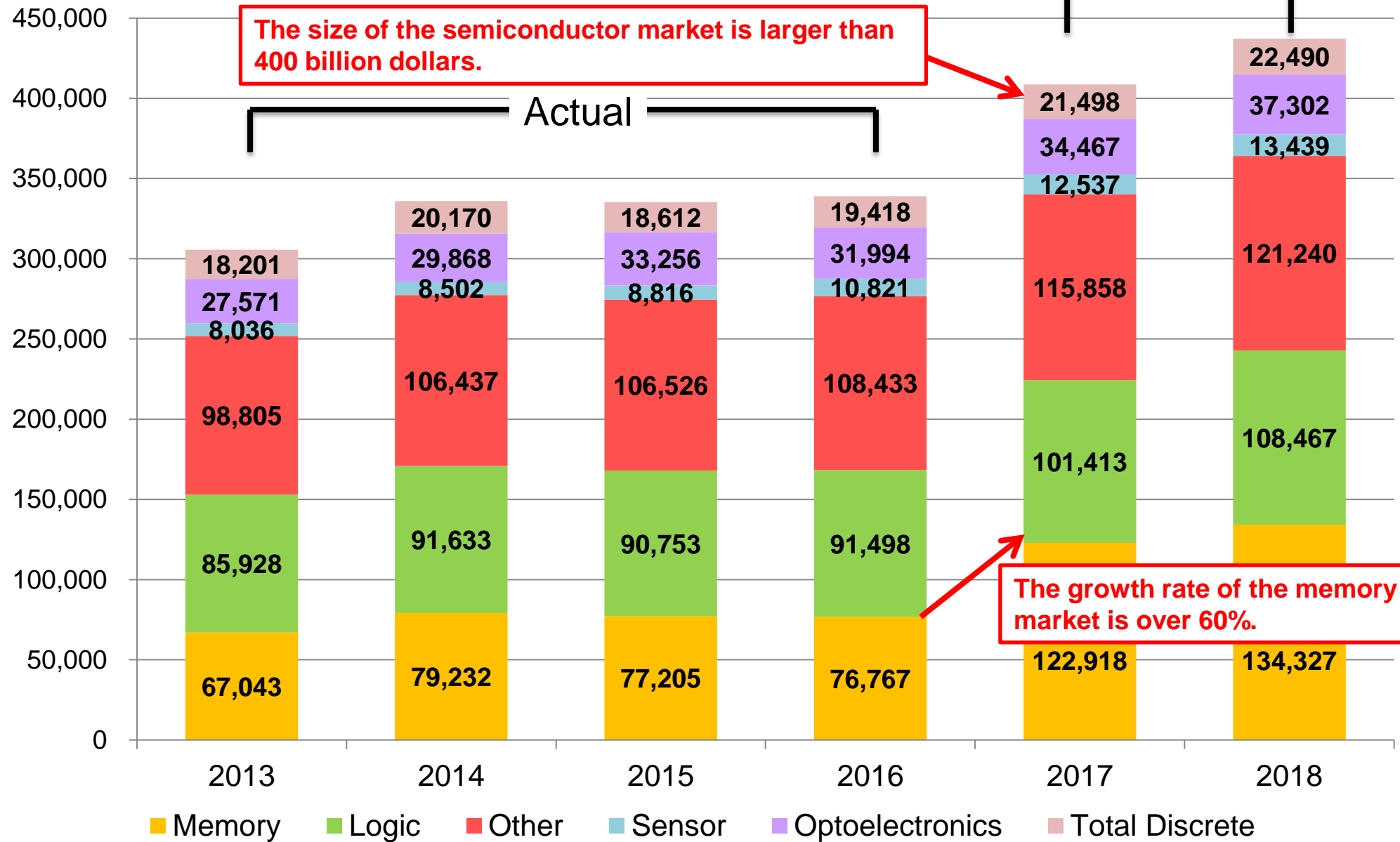
## <Features of our products and new products>

- (1) With our ultra purification technology and ultra sensitive technology, we are able to supply the ultra-high-purity hydrofluoric acid and the ultra-high-purity buffered hydrofluoric acid with the best quality in the world.
- (2) Products Lineups are readied to respond the customer requirements, including like suppression of adhering particles, and suppression of increased roughness of wafer surfaces, and others, for the semiconductor and FPD manufacturing process.

Product name (Semiconductor and LCDs)	Description
Ultra-high-purity hydrofluoric acid	The ultra-high-purity chemical used for wet etching and wet cleaning of silicon wafers in manufacturing semiconductors, FPDs, solar batteries and MEMS.
Ultra-high-purity buffered hydrofluoric acid	The ultra-high-purity chemical mixed hydrofluoric acid and ammonium fluoride.
Buffered hydrofluoric acid (BHF)	The chemical mixed 50% hydrofluoric acid and 40% ammonium fluoride solutions.
LL BHF	BHF with various functionalities by adding a surfactant.
LAL BHF	BHF containing a surfactant which has achieved extended service life and other advantages by optimizing the concentration of ammonium fluoride to 17to 20%, about a half the concentration of ammonium fluoride in general BHF.
Ex-LAL BHF * New product	BHF containing a surfactant and ammonium fluoride in a reduced concentration of 5%, which has achieved precipitation of crystal onto the equipment
HSN BHF * New product	Silicon oxide etchant with high selectivity for silicon nitride.
LPL BHF * New product	Silicon oxide etchant without damaging to silicon and poly-silicon absolutely.

# <Result and Forecast of World Semiconductor Market Scale by Product>

(In millions of dollars)



Source: World Semiconductor Trade Statistics Inc. (WSTS)

## <Development of New Memory Market>

Manufacturer	Place of construction	Base name	Produced item	Wafer size	Production capacity, etc.	Plan
Samsung Electronics	Xian	17 lines (II)	3D-NAND	12 inches	200,000 wafers/month	Expansion from 130,000 wafers/month to 200,000 wafers/month in 2019 Operation in 2018
	Pyeongtaek	18 lines	3D-NAND	12 inches	100,000 wafers/month	Expansion to 300,000 wafers/month in 2018 Additional investment up to 2021 planned
SK Hynix	Wuxi	C2	DRAM	12 inches	140,000 wafers/month	Operation of the new DRAM building in the second half of 2018
	Cheongju	M15	3D-NAND		140,000 wafers/month	Operation in the second half of 2018
Toshiba Memory	Yokkaichi	N-Y2	3D-NAND	12 inches	100,000 wafers/month	
		Y6	3D-NAND	12 inches		Flushing in 1Q 2018
	Iwate		3D-NAND	12 inches		Under planning
Intel	Dalian	Fab 2	3D-NAND	12 inches	80,000 wafers/month	Under construction Introduction of equipment in February 2018
Micron Technology	Hiroshima	Fab 15	DRAM	12 inches	160,000 wafers/month	A new building under construction for the mass production of 1Xnm
Fujian Electronics & Information; JHICC * Technology licensed by UMC	Quanzhou		Nitch DRAM	12 inches	60,000 wafers/month	Operation in 2Q 2018
Innotron Memory	Hefei		DRAM	12 inches	125,000 wafers/month	Flushing in 1Q and start of trial production in 2Q of 2018
Yangtze River Storage Technology (YRST); YMTC * Tsinghua Unigroup acquired capital in XMC.	Chengdu		3D-NAND	12 inches	50,000 wafers/month	Equipment introduction in 2Q 2018

Large-scale investments are planned in new memory factories in East Asia including the Republic of Korea and China. Demand for memory is growing in smartphone and mobile tablet applications, and the market is expected to expand in the future.

**We pursue the sales to the memory market with active strategies.**

# <Maintenance and Strengthening of Quality Edge>

## ◆ SA Grade HF quality ◆

Product technology generation	≥45 nm	28 nm	≤16 nm
<b>Our product grade</b>	SA/SA-X	SA-XX	<b>SA-XXX</b>
<b>Metal impurities level</b>	<100 ppt	< 10 ppt	< 1 ppt <u>Succeeded in ultra-high-purity</u>
<b>Management size of particle</b>	0.2/0.1 μm	0.05 μm	<b>0.03 μm</b>

Further strengthening particle management

with introducing the World's most advanced analytical instruments.



Liquid-borne particle counter

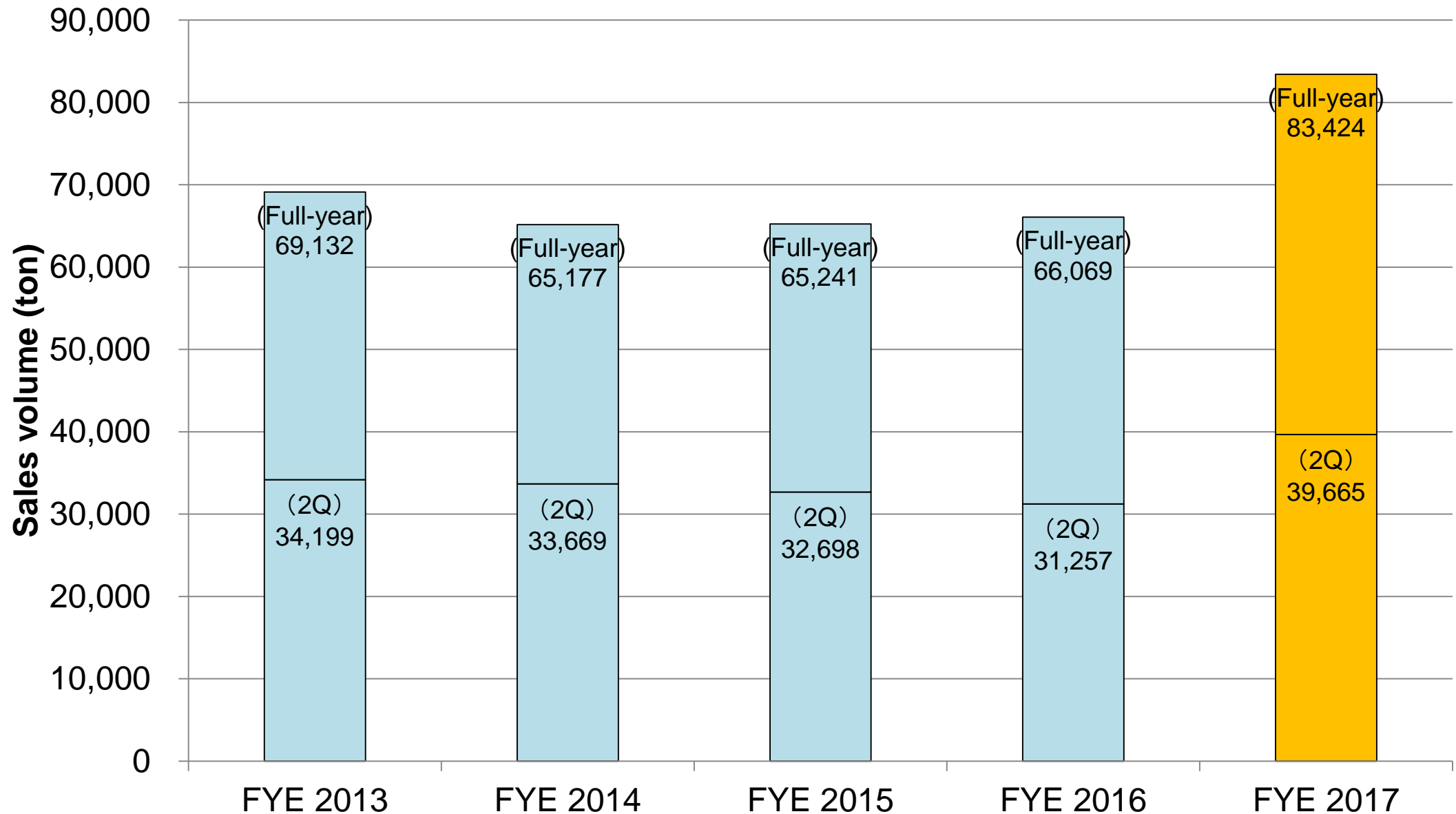
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High resolution ICP-MS

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

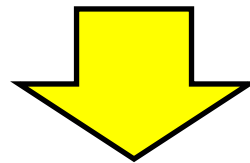


## <Boosting Production of Semiconductor Chemicals>

The shipping volume of 83,424 t in 2017 is the largest figure in the past.

The shipping volume in 2018 is expected to be 90,000 t.

**To expand our share and strengthen the stable supply system**



Establishment of the system that makes it possible to supply 100,000 t/year in 2018



# Batteries

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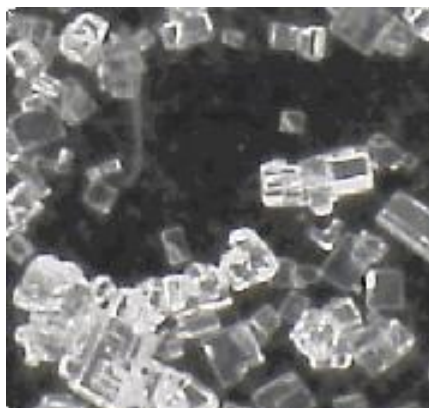
- Features of our products
- Approaches of Countries toward Automobile Businesses
- Global Market for Lithium-ion Secondary Batteries (LIB)
- Launch of electrolyte business for lithium-ion secondary batteries in China
- Additive for lithium-ion batteries



## <Features of Our Products>

- (1) Used as main material comprising the lithium-ion secondary batteries and commercialized ahead of other companies
- (2) Because of the product's high purity, it is recently being used for high-performance lithium-ion secondary batteries.

Product name (related to batteries)	Description
Lithium hexafluorophosphate	Electrolyte for lithium-ion secondary batteries Electrolyte for other batteries
Lithium tetrafluoroborate	Electrolyte and additives for lithium-ion primary and secondary batteries
Additive for batteries	Additive for lithium-ion batteries



<Lithium hexafluorophosphate particle form>

<Lithium tetrafluoroborate>

<Large-size container: 1 m<sup>3</sup>>

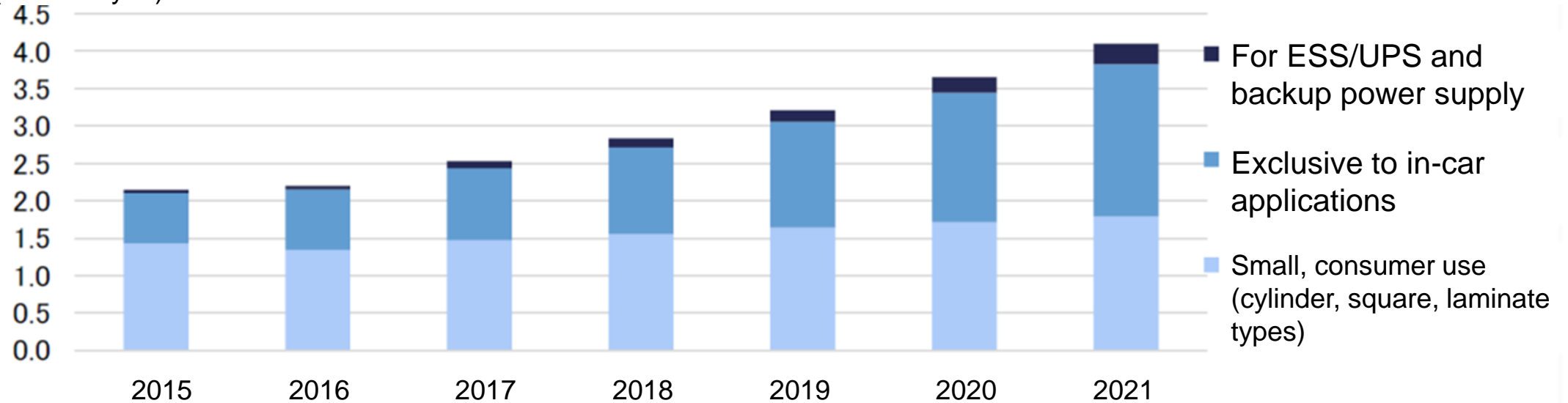
## <Approaches of Countries toward Automobile Businesses>

Country/region	Course of action/policy
UK and France	The sale of gasoline and diesel-powered vehicles will be banned by 2040.
Norway and Netherlands	The sale of gasoline and diesel-powered vehicles will be banned from 2025.
China	It is required that new energy vehicles (NEV) account for at least 10% of automobiles to be sold in China in 2019.
India	Total ban on the sale of gasoline and diesel-powered vehicles will be imposed to limit all automobiles sold in India to electric vehicles by 2030.
U.S. (California)	A manufacturer selling more automobiles than the number specified by the state must sell zero-emission vehicles (ZEV) at a fixed proportion of the total number of vehicles sold.

# <Global Market for Lithium-ion Secondary Batteries>

(In trillion yen)

Prospects for 2017 and forecasts for 2018 and beyond



Source: Press release by Fuji Keizai Management Co., Ltd.

**Demand for Lithium-ion batteries exclusive to in-car applications is expected to grow further because of an increase in global demand for environment-friendly vehicles.**



# <Launch of Electrolyte Business for Lithium-Ion Secondary Batteries in China>

## Outline

\* Converted at the rate of 1 Chinese yuan = 19 yen (as of October 27, 2015)

Name	Quzhou BDX New Chemical Materials Co., Ltd. (established in December 2015)
Head Office:	17 Nianhua Road, Kecheng District, Quzhou City, Zhejiang Province, People's Republic of China
Business lineup	Research & development and production of Lithium hexafluorophosphate (LiPF <sub>6</sub> ), byproduct hydrofluoric acid for industrial use, hydrochloric acid, and other fluorine-containing chemical system products and sale of in-house products and provision of related services
Capital fund	70 million Chinese yuan (1,330 million yen*) Stella: 25.0%; Quzhou NGF Chemicals Co., Ltd.: 75.0%
Objectives	In China, continuous growth of lithium-ion secondary battery industry is anticipated. A local production system is established to handle demand in China.
Details of cooperation	Part of the manufacturing facilities of electrolyte for lithium-ion batteries is relocated to a joint company. The joint company produces the electrolyte for lithium-ion batteries by the relocated facilities and markets the electrolyte in and outside China.



# <Launch of Electrolyte Business for Lithium-Ion Secondary Batteries in China>

## ■ Quzhou BDX New Chemical Materials Co., Ltd.



Product and material warehouse



Manufacturing building



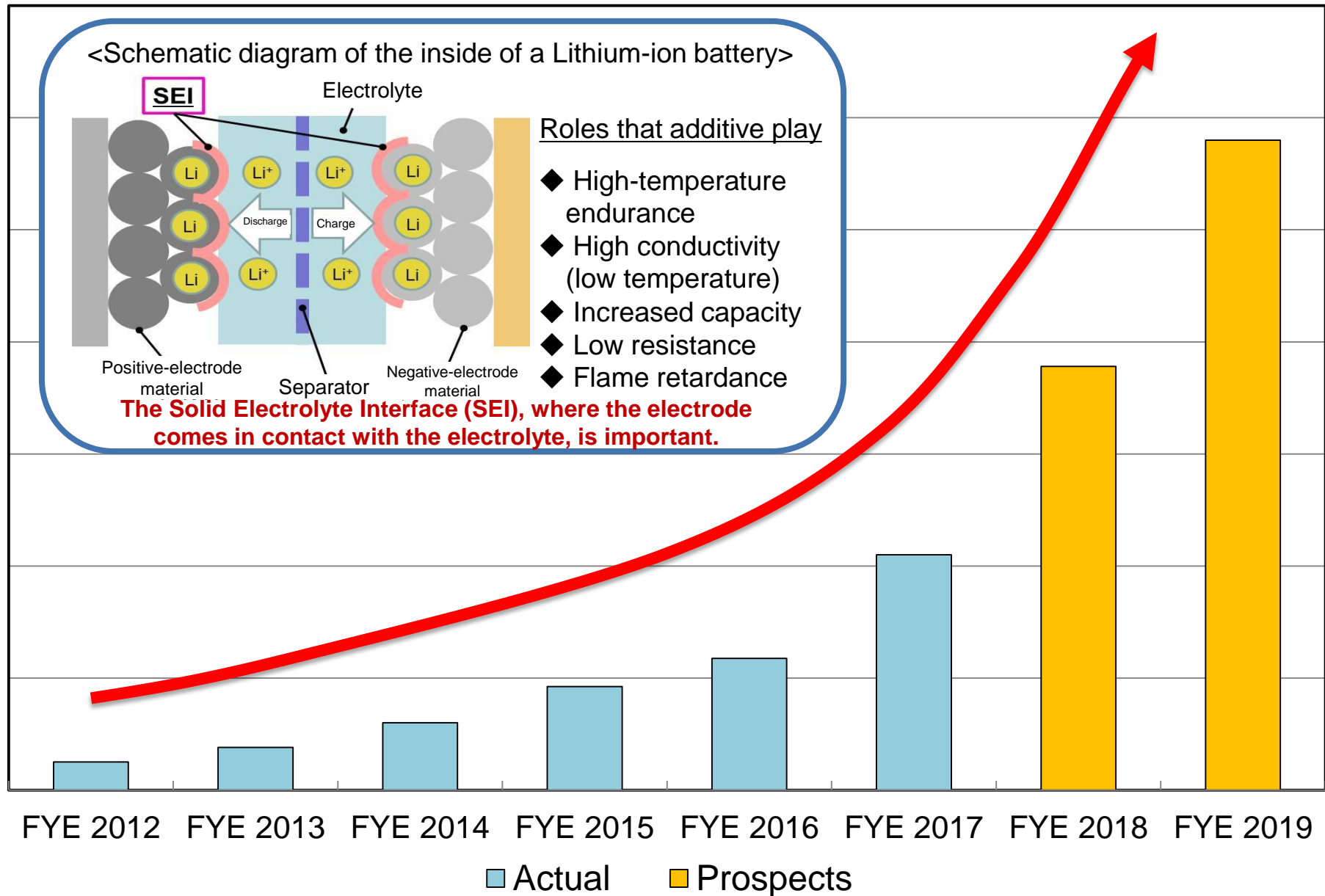
Utility building

- June 2017  
Start of operation of manufacturing facilities.  
(Manufacturing capacity: 1,300 t/year at maximum)

Evaluation by customers has been ongoing.  
The sales to some customers started.



# <Additives for Lithium-ion Batteries>



# GMP-related

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- GMP(Good Manufacturing Practice)
- Growth of GMP-compliant Products

# <GMP(Good Manufacturing Practice)>

## Standards for Manufacturing Control and Quality Control for Drugs and Quasi-drugs

Three principles: "Reducing human errors to the lowest level"

"Preventing contamination and product quality loss"

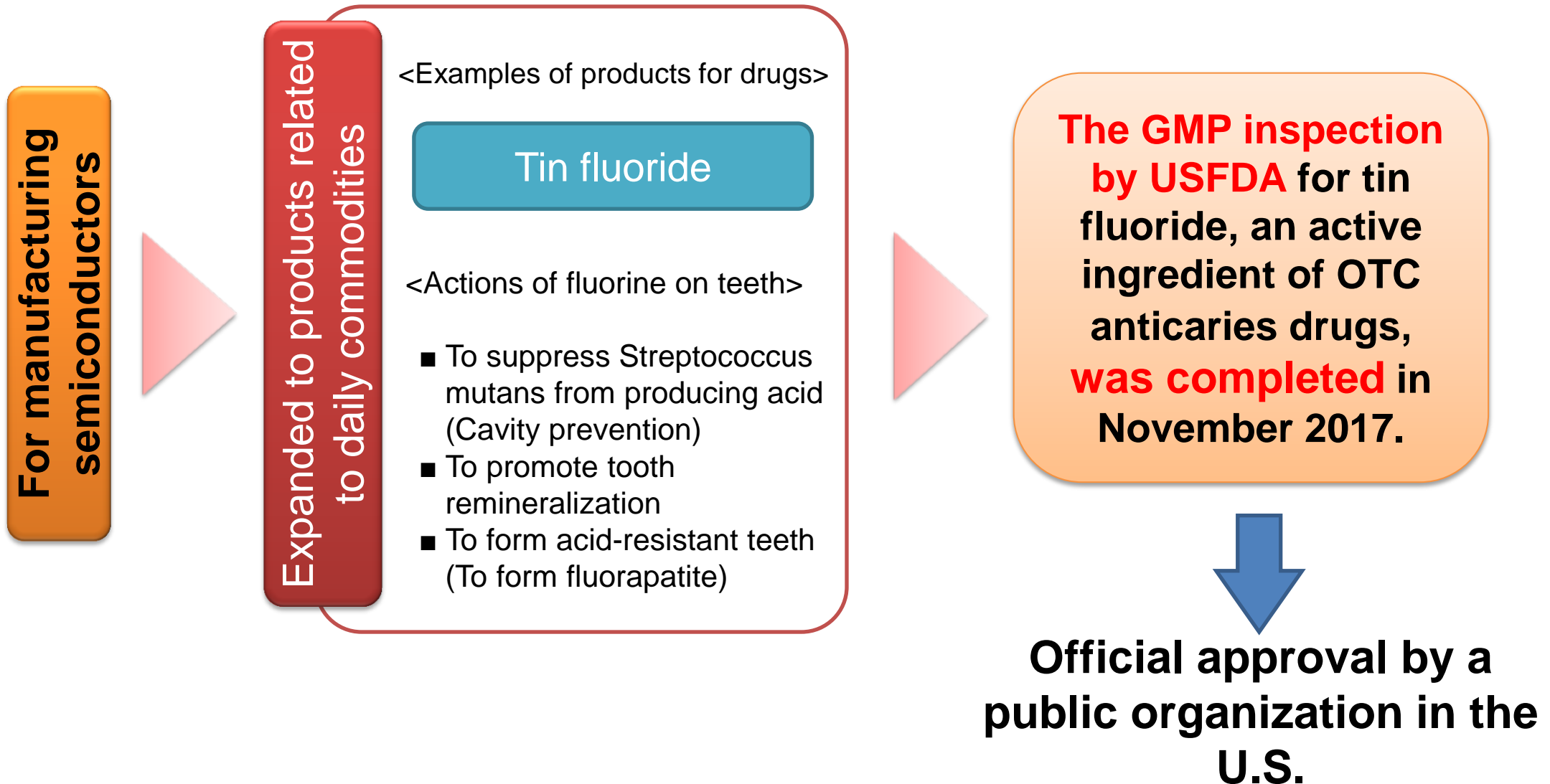
"Designing systems to assure high product quality"



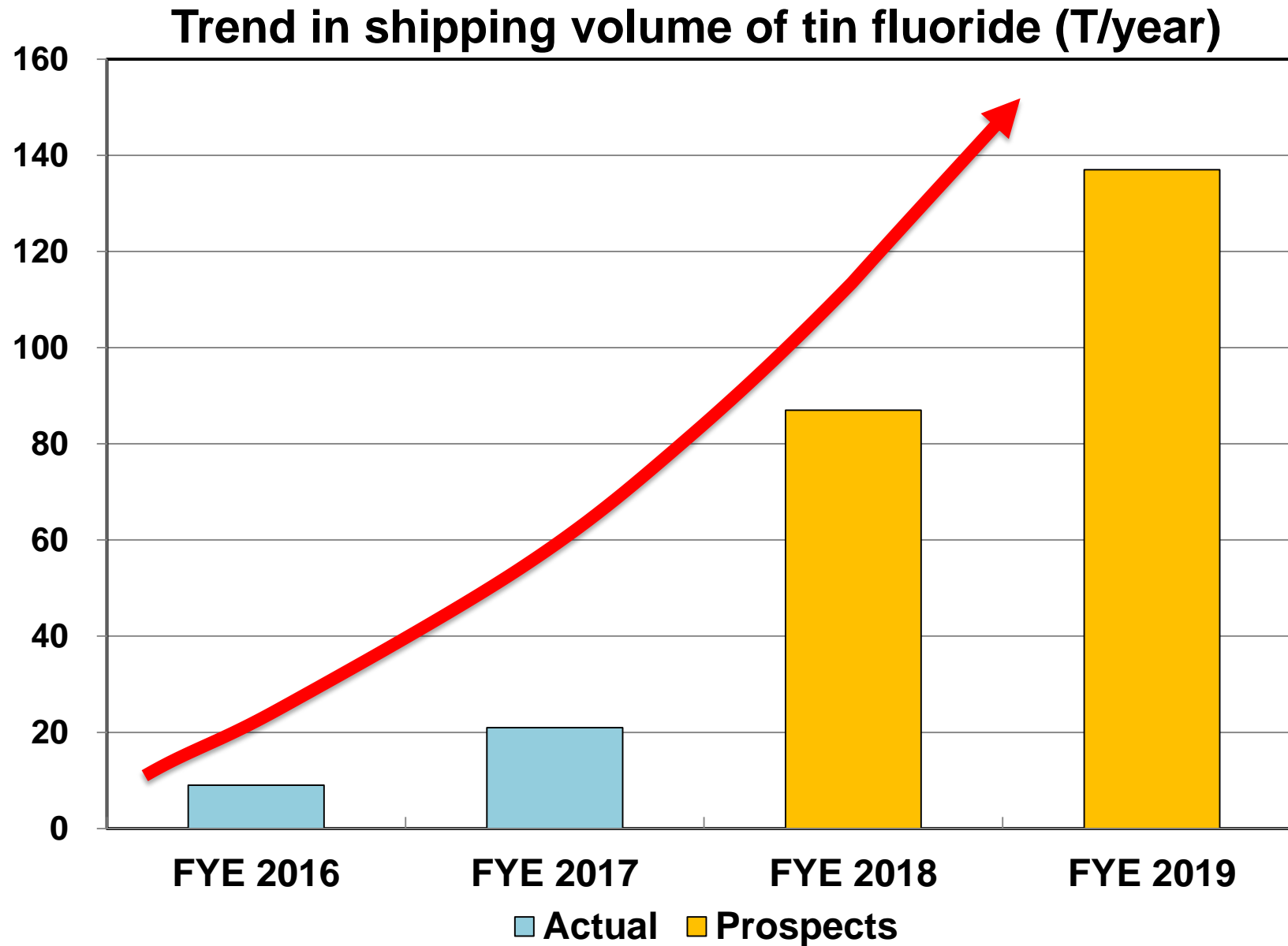
Inside Izumi Factory (Izumi Otsu City)



# <GMP (Good Manufacturing Practice)>



# <Growth of GMP-compliant Products>



## 4. Medical Business

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- Corporate Profile (as of March 31, 2018)
- Development of New Radiotherapy Technology - BNCT-
- Establishment of Enrichment Technology/Features of Enriched Boron/  
Applications of Enriched Boron Compounds
- World's First Accelerator-based BNCT Clinical Trial
- Participation in Development of Imaging Diagnostic Technology
- Establishment of  $^{18}\text{F}$ BPA-PET Development System

## <Corporate Profile (as of March 31, 2018)>

**Corporate name:** STELLA PHARMA CORPORATION

**Head Office:** 3-2-7 Koraibashi, Chuo-ku, Osaka-shi, Osaka

**Representatives** Tomoyuki Asano, Representative Director and President

**Established** June 2007

**Capital fund** 1.9 billion yen

**Business lineup** Research and development, manufacture and marketing, etc. of drugs and medical devices

**Shareholders** STELLA CHEMIFA CORPORATION  
Innovation Network Corporation of Japan  
Sumitomo Heavy Industries, Ltd.

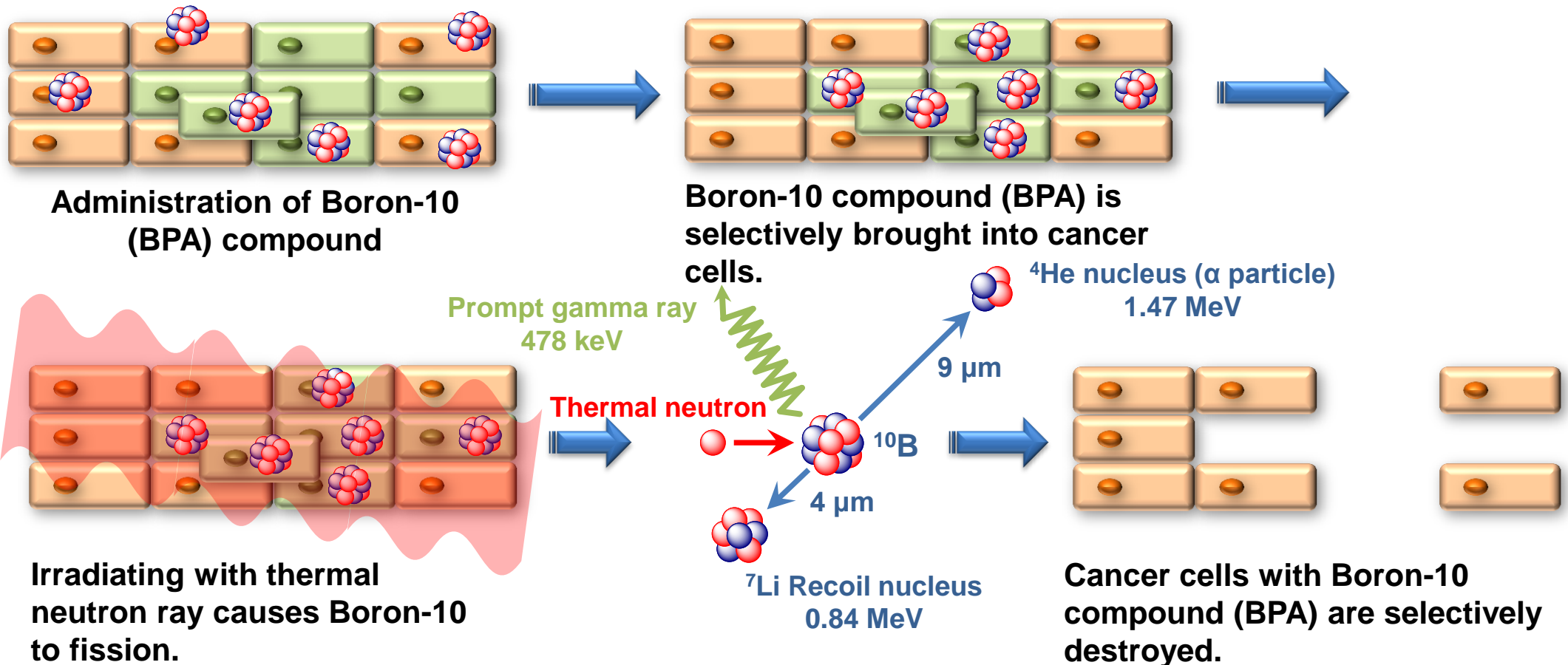
**Capital fund** Sakai Drug Discovery Research Center  
(Naka-ku, Sakai-shi, Osaka)



STELLA PHARMA

## <Development of New Radiotherapy Technology -BNCT->

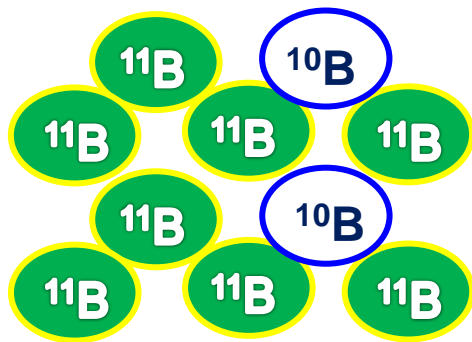
Boron Neutron Capture Therapy (BNCT) is a particle beam radiation therapy which specifically damages cancer cells by making the best of the **nuclear fission reactions** between **boron 10** and **thermal neutrons** with small energy.



# <Establishment of Enrichment Technology/Features of Enriched Boron/Applications of Enriched Boron Compounds>

## ■ Establishment of enrichment technology

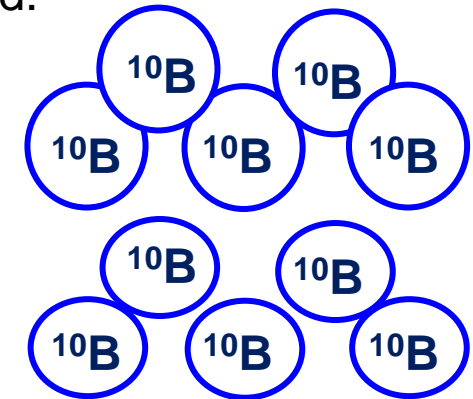
STELLA CHEMIFA established a mass production technology of  $^{10}\text{B}$  for the first time in Japan, and in November 2000, the only enrichment plant in Japan was established.



Enrichment and separation



Generation



<The only  $^{10}\text{B}$  enrichment plant in Japan> (completed in November 2000)

## ■ Features of enriched boron

$^{10}\text{B}$  offers properties of remarkably high neutron absorption capacity, and by increasing  $^{10}\text{B}$  concentration, the absorption capacity is improved significantly.

## ■ 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.
- **Cancer drug for boron neutron capture therapy (BNCT)**

## <World's First Accelerator-based BNCT Clinical Trial>

The world's first clinical trials using the boron-based drug (SPM-011) developed by Stella Pharma and the accelerator-based irradiation system (BNCT 30) developed by Sumitomo Heavy Industries have been on-going.

### Phase II study for brain tumor

Against the number of subjects to be tested, BNCT irradiation has been completed for more than 95% of the cases. (As of the end of April 2018)

### Phase II study for head and neck cancer

Against the number of subjects to be tested, BNCT irradiation has been completed for all cases. (As of the end of February 2018)

## <<Flow chart of assumption, from clinical trial to approval application>>

Phase I study

Neutron dose is increased stepwise to check safety.

Phase II study

Verification of the effect at the determined dose.

Approval application (scheduled)

SPM-011 and BNCT30 were designated as the products subject to the MHLW Prioritized Review System for innovative medicines "SAKIGAKE" in 2017.

This allows the drug and device to be given priorities in the consultation and review process for approval, and hence we undertake efforts to speed up their development.



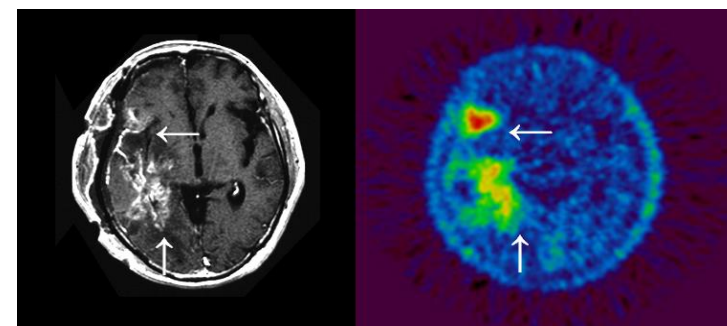
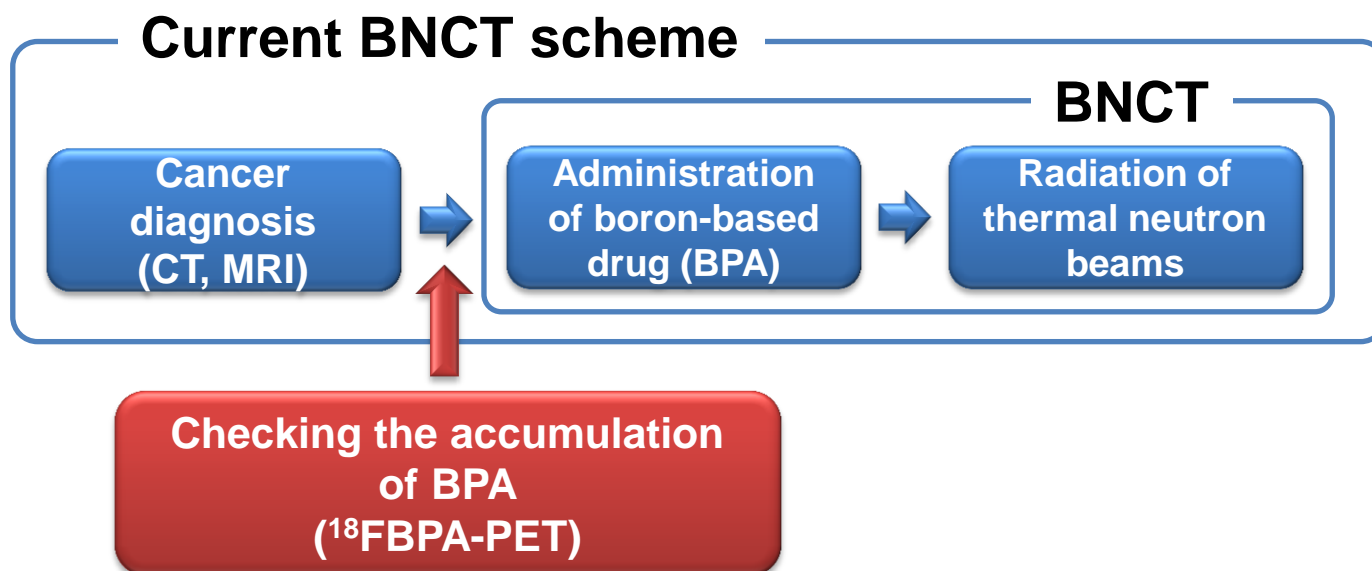
## <Participation in Development of Imaging Diagnostic Technology -PET Diagnosis->

The “PET diagnosis” that attracts attention as a technology useful for the early detection of cancers

We have undertaken the development of  $^{18}\text{F}$ BPA, which has been studied as a new drug to be used for the technology.

### Features of $^{18}\text{F}$ BPA-PET

- ☆ It is expected that  $^{18}\text{F}$ BPA-PET contributes to the development of BNCT because the accumulation of the boron-based drug (BPA) against cancer can be checked beforehand (before treatment).



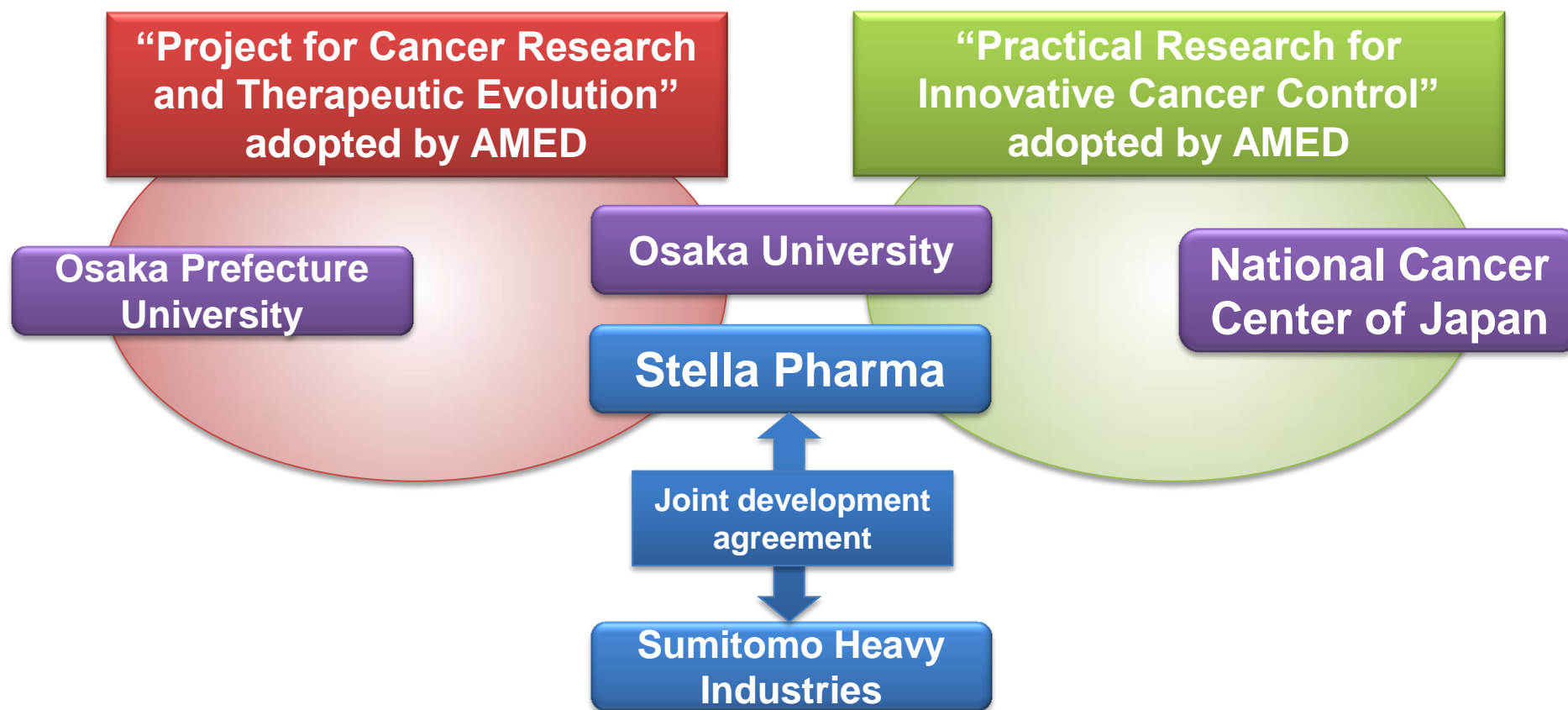
(Left) MRI image of brain tumors  
(Right)  $^{18}\text{F}$ -BPA PET image of brain tumors

Photo: Courtesy of Professor Ono at Kyoto University Research Reactor Institute



## <Establishment of $^{18}\text{F}$ BPA-PET Development System>

To implement this project, we have been conducting joint research with Osaka University, National Cancer Center of Japan, and Osaka Prefecture University, through the following projects adopted by the Japan Agency for Medical Research and Development (AMED). We have also been proceeding with the specific development of an automated synthesis equipment required for the commercialization jointly with Sumitomo Heavy Industries, Ltd.



# 5. Transportation Business

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- Corporate Profile (as of March 31, 2018)
- Transportation System by Cooperation with Domestic Bases
- Overseas Bases
- International Intermodal Logistics System
- Future Activities

## <Corporate Profile (as of March 31, 2018)>

**Corporate name:** BLUE EXPRESS CORPORATION

**Head Office:** 10 Ohamanishi-machi, Sakai-ku, Sakai-shi

**Representatives** Kiyonori Saka, Representative Director and President

**Established** June 1991

**Capital fund** 350 million yen

**Business lineup** Common motor trucking/International intermodal transport  
Warehousing/Customs clearing agent/Sales, rental and lease  
of containers, tanks, etc.  
Automobile maintenance services / Business related to life  
insurance and non-life insurance agent, etc.

**URL** <http://www.blue-express.co.jp/>



# <Transportation System by Cooperation with Domestic Bases>



- Shipping terminals
- Sendai Office
- Kanto Office
- Yokohama Office
- Shimizu Office
- Nagoya Office
- Ohama Office
- Kobe Office
- Kitakyushu Office

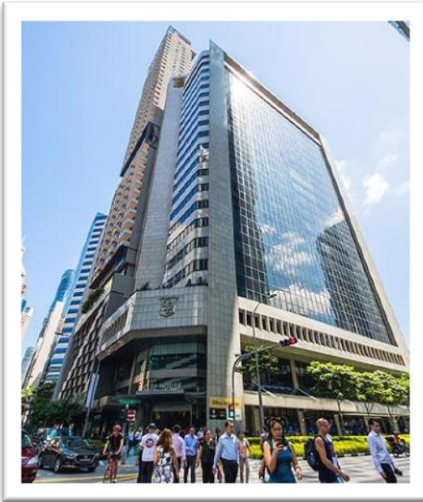
★ Customs clearance sites

Yokohama Office  
Osaka Office  
Ohama Office



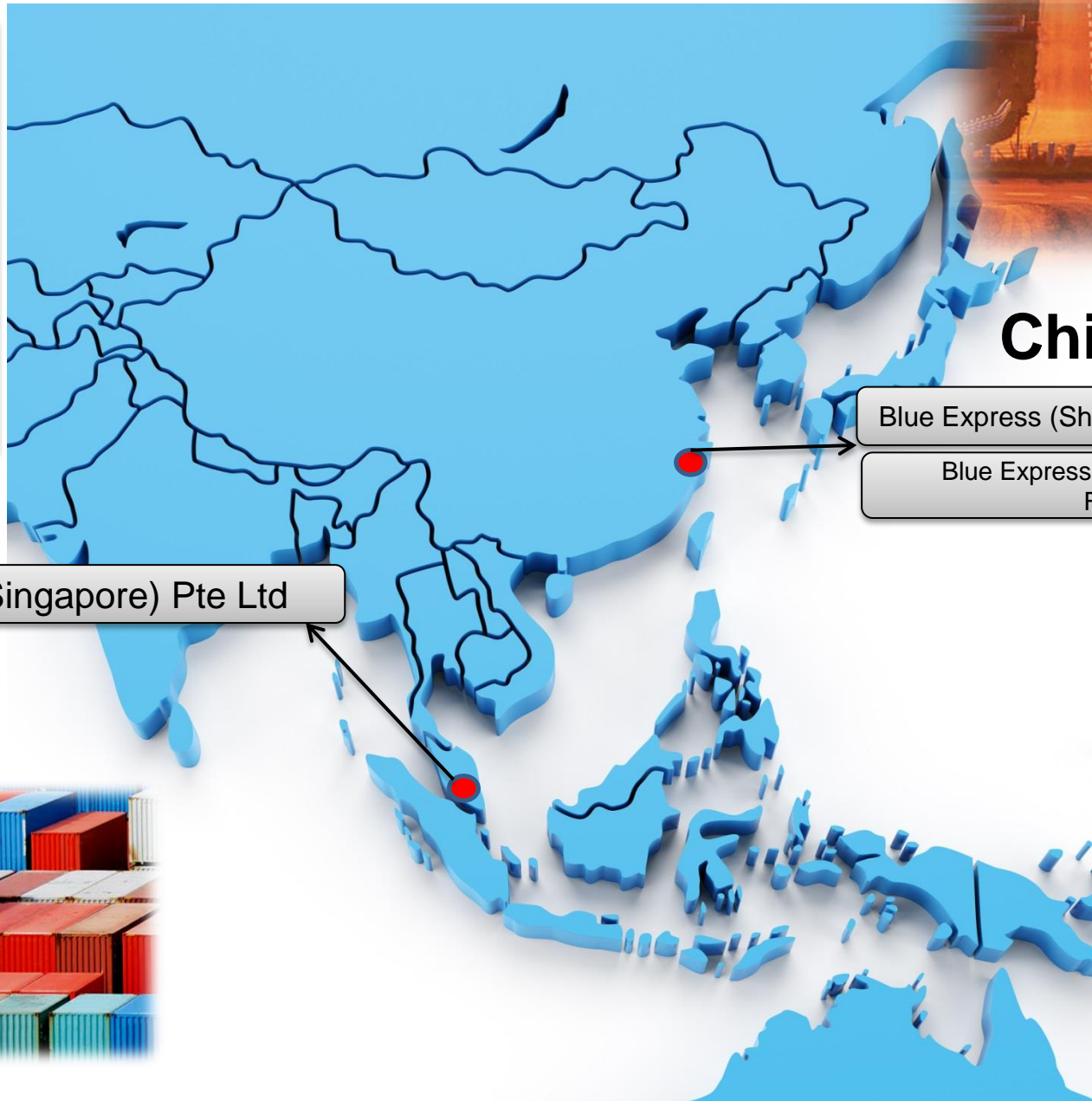
Kitakyushu Office  
Opened in October 2014

# <Overseas Bases>



## Singapore

Stella Express (Singapore) Pte Ltd



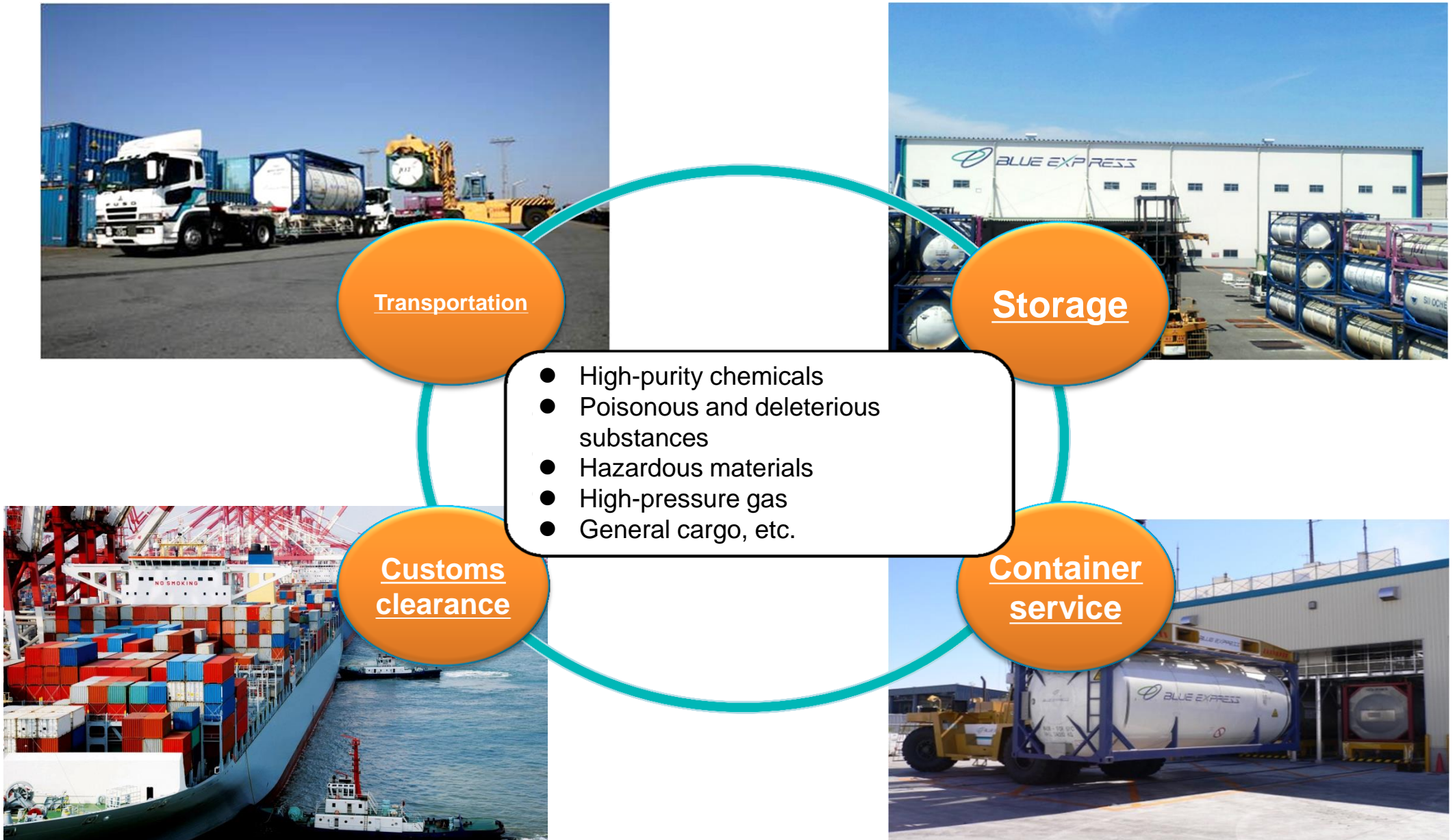
## China (Shanghai)

Blue Express (Shanghai) International Trade Inc.

Blue Express (Shanghai) International Freight Forwarding Co., Ltd.



# <International Intermodal Logistics system>



## <Future Activities>

- To steadily expand business with first priority given to the improvement of customer satisfaction.  
**Further quality improvement of international intermodal logistics service**
- To maintain continuous investment for further growth  
**Extension of hazardous substance warehouses, etc.  
 (construction started in April 2018)**
- To further strengthen business operation base and revenue base
  - Streamlining of compliance system, acquisition of human resources
  - Streamlining the integration of the Tokyo and Yokohama offices into one (April 2018)



## 6. Future Activities

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- Approaches to Advanced Energy Devices [1]
- Approaches to Advanced Energy Devices [2]
- Approaches to Advanced Energy Devices [3]
- Development of Fluoride Nanoparticles



# <Approaches to Advanced Energy Devices [1]>

Energy devices for which increases in demand are expected [1]

## Lithium-ion batteries



a) Automobile applications



b) Residential applications

New additives for electrolytes of Lithium-ion batteries (LIBs)

New additives for electrolytes of Lithium-ion batteries (LIBs)



**User evaluation is continued**

## <Approaches to Advanced Energy Devices [2]>

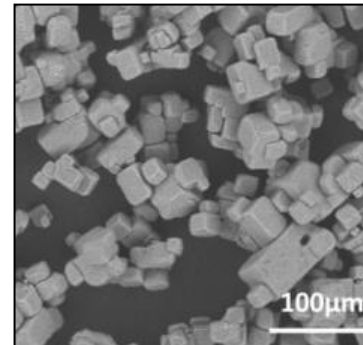
Energy devices for which increases in demand are expected [2]

### Next-generation secondary batteries



Appearance of sodium ion battery prototypes (image)

### Electrolyte for high-purity Sodium-ion batteries



**Promotion of sample work**

# <Approaches to Advanced Energy Devices [3]>

## Energy devices for which increases in demand are expected [3]

### Fuel cells



Fuel-cell vehicles



Residential units

### Catalysts for high-performance fuel cells



**To start of PR**

# <Development of Fluoride Nanoparticles>

## Antireflection film

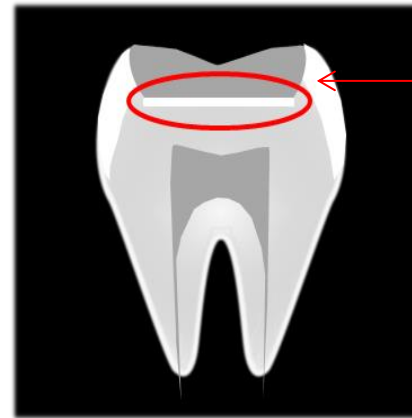
Heads-up display      Navigation      Interior panels



For example, for antireflection applications in various in-car parts, it is expected for **fluoride nanoparticles** to be used, which is a low refractive index material

## Oral care

Development of nano filler for dental composite resin



Dental X-ray image

A radiopaque fluoride nano filler makes it easy to identify the boundary of dentin.



Roll-out to the dental material market



Image of teeth using fluoride fillers

A fluoride nano filler that transmits visible light enables aesthetic dental treatments.

# 7. Medium-term Management Plan (FYE 3/2017 to FYE 3/2019)

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## Notice on modification of numerical targets

- Financial Highlights of FYE 3/2018
- Modification of Numerical Targets

## <Financial Highlights of FYE 3/2018>

The business results of FYE 3/2018 show that, in the main semiconductor/LCD sector, a dramatic increase in revenue was achieved because of the promptly reinforced system for boosting production to respond to the increasing demand in the active semiconductor market; however, the price of the main raw material, anhydrous hydrofluoric acid, sharply rose due to a severe short supply in the Chinese market and the procurement price for the material remained at a record-high level, resulting in a decrease of profits.

(Plan/Results)

(In millions of yen)

	FYE 3/2018 (plan)*	FYE 3/2018 (results)
<b>Sales revenue (consolidated)</b>	33,400	<b>33,622</b>
<b>Operating profit (consolidated)</b>	2,100	<b>2,369</b>

\* Announced February 9, 2018

## <Modification of Numerical Targets>

After taking into consideration the trends in raw material prices and the market environment in FYE 3/2019 based on the trends in the business results of FYE 3/2018, we have prospects that, although the effects of our top-priority action item—passing on rising costs—and increasing shipping volume will contribute to an upturn in sales and an increase in profit, the target figures of profits previously released will not be achieved because the prices of raw materials that are expected to remain in the stratosphere will inevitably be affected.

**(Before modification)**

(In millions of yen)

	<b>FYE 3/2019</b> *
<b>Sales revenue (consolidated)</b>	<b>32,200</b>
<b>Operating profit (consolidated)</b>	<b>4,400</b>



**(After modification)**

(In millions of yen)

	<b>FYE 3/2019</b>
<b>Sales revenue (consolidated)</b>	<b>37,700</b>
<b>Operating profit (consolidated)</b>	<b>2,600</b>

\* Announced on April 28, 2017

## <Modification of Numerical Targets>

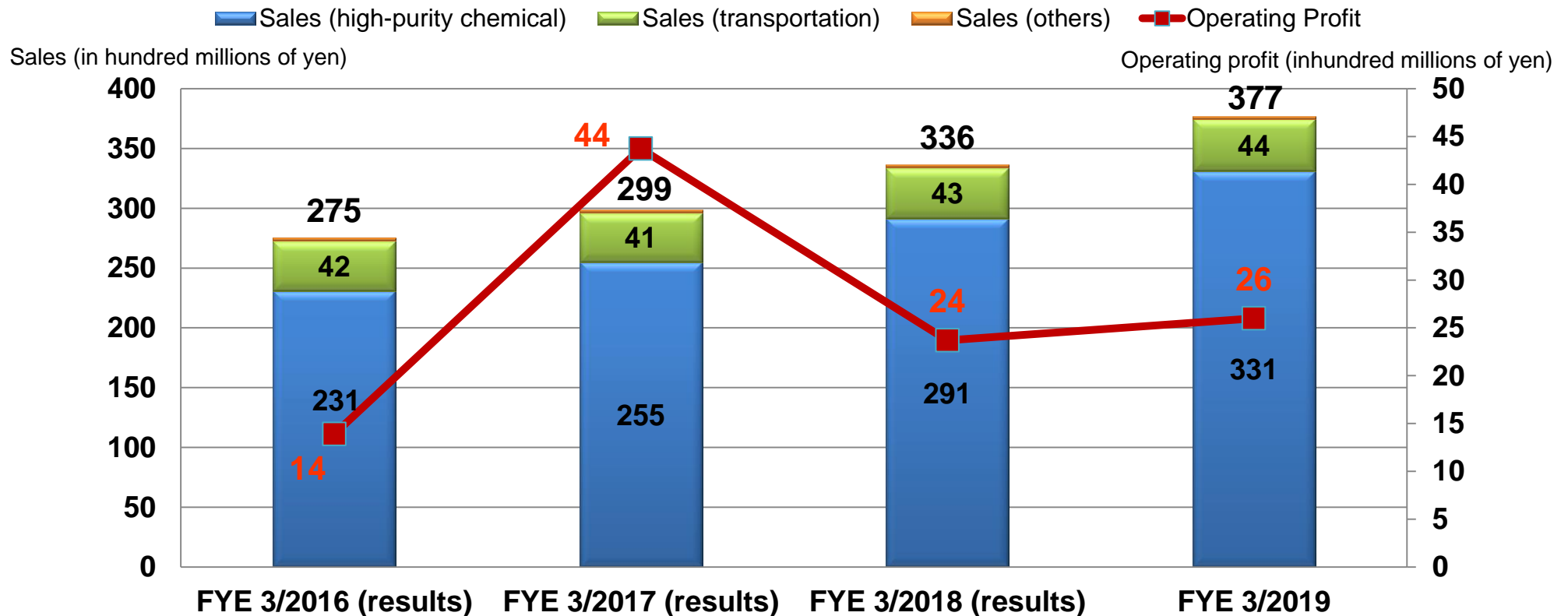
In the period of present medium-term management plan (FYE 3/2017 to FYE 3/2019), “profit” is secured and increased by:

- ◆ increased sales and profit in the high-purity chemical business
- ◆ steady profit increase in the transportation business

We will make

- ◆ investments in research and development for starting up the medical business, and aim at achieving the consolidated operating profit of 2.6 billion yen (operating margin of 6.9%) for the FYE 3/2019.

### Numerical Targets of Medium-term Management Plan (Consolidated)





## Corporate slogan

**Beyond the Chemical**  
Beyond the Chemical

We are drawing upon the strengths in the chemical field whose growth we have nurtured so far and moving toward even greater development in the future.

High-purity chemical  
business field

Transportation  
business field

Medical business  
field



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