

Financial Results for 1st Half of FYE 3/2020

Securities code: 4109

1. Consolidated Financial Results for 1st Half of FYE 3/2020

- Financial Summary
- Breakdown of Non-Operating Profit and Loss/Extraordinary Profit and Loss
- Quarterly Operating Profit
- Sales Revenue and Operating Profit by Business
- Transitions in Trade Statistics Value of Anhydrous Hydrofluoric Acid
- Balance Sheet
- Cash Flows, Capital Expenditures, Depreciation & Amortization, Research & Development Expenses

<Financial Summary>

(In millions of yen)	1st Half of FYE 3/2019	1st Half of FYE 3/2020	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	19,458	17,140	-2,318	-11.9
Gross Profit	4,314	3,201	-1,112	-25.8
Operating Profit	2,159	996	-1,163	-53.9
Ordinary Profit	2,367	955	-1,411	-59.6
Quarterly Profit Attributable to Owners of Parent	1,494	630	-863	-57.8
Earnings Per Share (yen)	115.73	48.85	-66.88	-57.8

<Breakdown of Non-Operating Profit and Loss/Extraordinary Profit and Loss>

■ Non-Operating Profit and Loss

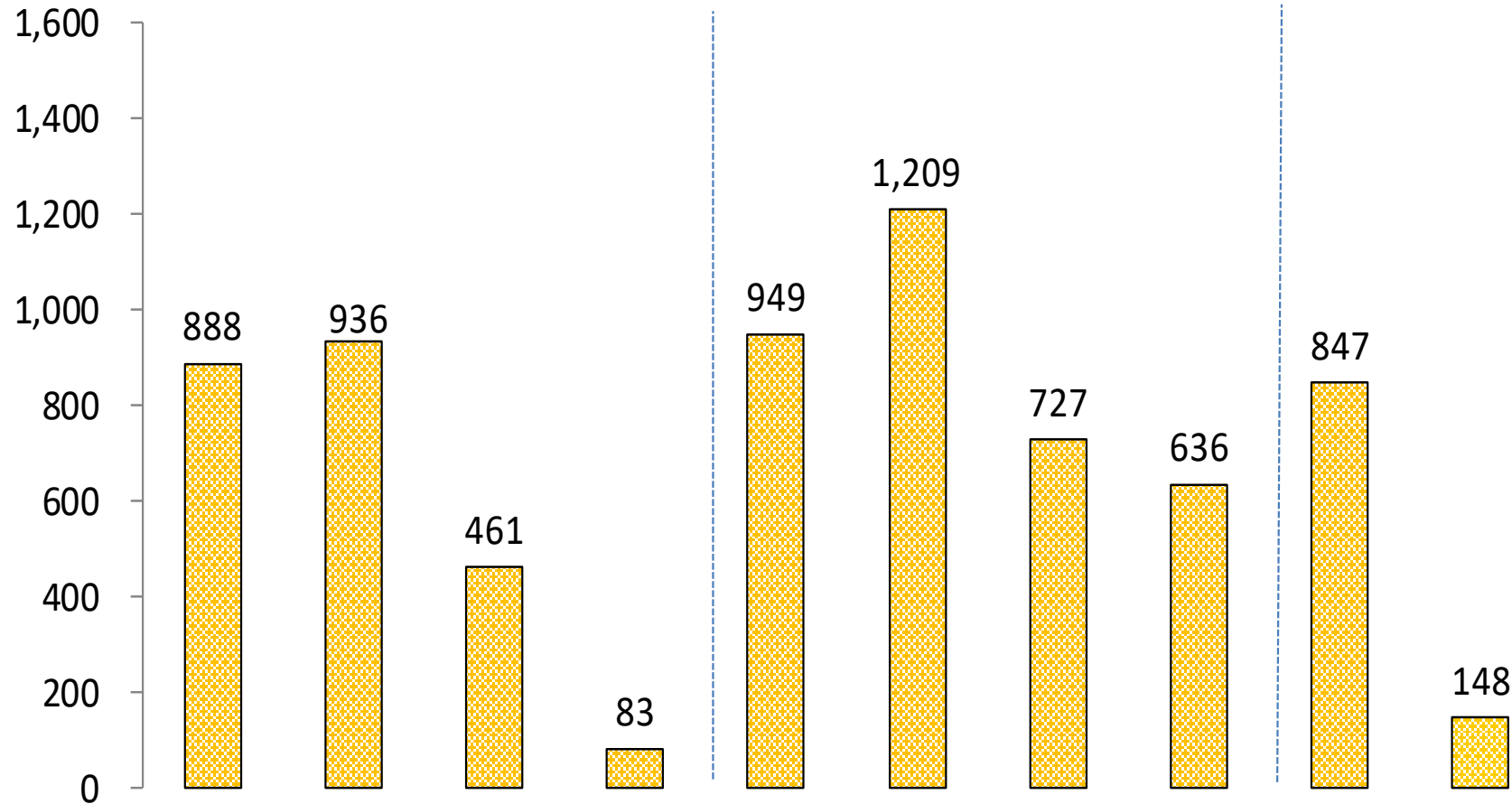
(In millions of yen)	1st Half of FYE 3/2019	1st Half of FYE 3/2020
Non-Operating Profit	435	93
Interest income	7	9
Dividend income	1	1
Gain on valuation of derivatives	348	-
Share of profit of entities accounted for using the equity method	-	40
Other	77	42
Non-Operating Expenses	227	134
Interest expenses	20	18
Foreign exchange losses	-	79
Loss on valuation of derivatives	-	1
Share of loss of entities accounted for using the equity method	191	-
Other	15	35

■ Extraordinary Profit and Loss

(In millions of yen)	1st Half of FYE 3/2019	1st Half of FYE 3/2020
Extraordinary Profit	11	31
Gain on sales of non-current assets	10	31
Extraordinary Losses	28	73
Loss on abandonment of non-current assets	28	72
Loss on sales of non-current assets	-	0

<Quarterly Operating Profit>

(millions of yen)

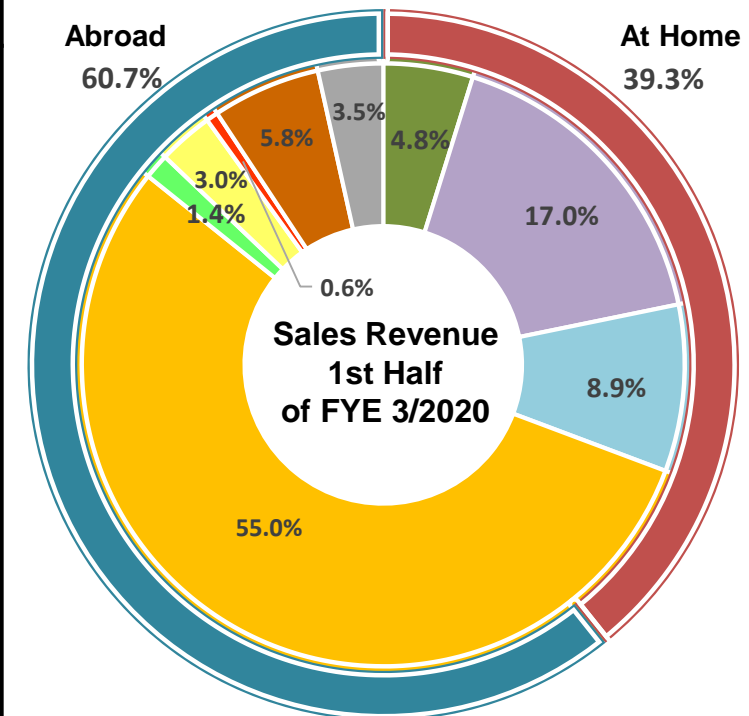


(In millions of yen)	FYE 3/2018				FYE 3/2019				FYE 3/2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Sales Revenue	8,159	8,561	8,314	8,587	10,134	9,323	9,275	9,649	9,733	7,406		
Operating Profit	888	936	461	83	949	1,209	727	636	847	148		
Operating Profit Margin	10.9%	10.9%	5.5%	1.0%	9.4%	13.0%	7.8%	6.6%	8.7%	2.0%		

<Sales Revenue and Operating Profit by Business>

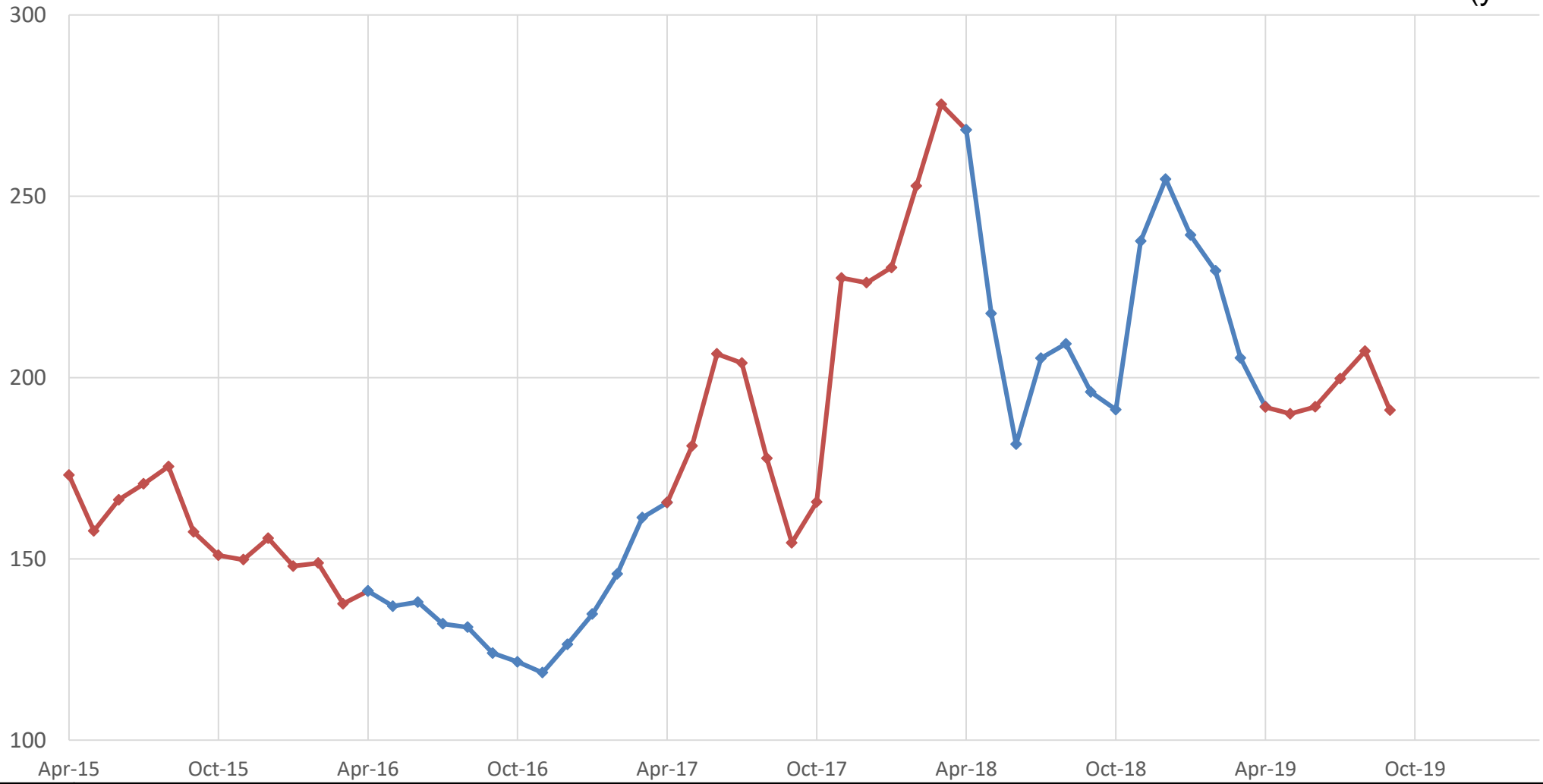
(In millions of yen)	1st Half of FYE 3/2019		1st Half of FYE 3/2020		Percentage Increase/Decrease	
	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
High-Purity Chemical Business	17,199	2,220	14,783	1,268	-14.0	-42.9
[High-Purity Chemical Business: Breakdown]						
Surface Treatment	1,115		710		-36.3	
Alternatives for CFCs	2,161		2,509		16.1	
Batteries	2,081		1,320		-36.5	
Semiconductors /LCDs	9,737		8,137		-16.4	
Semiconductor Devices	349		200		-42.8	
Catalysts	472		437		-7.5	
Gypsum	82		93		13.8	
General Products	723		857		18.6	
Other	475		515		8.3	
Transportation Business	2,159	413	2,241	244	3.8	-40.9
Medical Business	-	-505	-	-536	-	-
Other	99	21	115	16	16.1	-21.8

Sales Revenue Constituent Ratio of High-Purity Chemicals



- Surface Treatment
- Alternatives for CFCs
- Batteries
- Semiconductors/LCDs
- Semiconductor Devices
- Catalysts
- Gypsum
- General Products
- Other

<Transitions in Trade Statistics Value of Anhydrous Hydrofluoric Acid> *Reference data (yen/kg)



	FYE 3/2016	FYE 3/2017	FYE 3/2018	FYE 3/2019	1st Half of FYE 3/2020
Average Price	158	135	209	220	195

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

<Balance Sheet>

(In millions of yen)	FYE 3/2019 End-of-Year	Sep.30,2019	Increase/ Decrease	Percentage Increase/ Decrease
Assets	55,454	52,177	-3,277	-5.9
Cash and deposits	14,044	13,042	-1,002	-7.1
Operating receivables	9,678	7,556	-2,122	-21.9
Inventory assets	6,183	5,829	-354	-5.7
Property, plant, and equipment	22,329	22,415	86	0.4
Intangible assets	565	633	68	12.2
Liabilities	21,536	18,326	-3,209	-14.9
Operating liabilities	4,562	3,374	-1,188	-26.0
Interest-bearing liabilities	11,069	10,561	-507	-4.6
Net Assets	33,918	33,850	-68	-0.2
Equity capital	32,821	32,935	113	0.3
Liabilities and Net Assets	55,454	52,177	-3,277	-5.9

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

(1) Consolidated Statement of Cash Flows

(In millions of yen)	1st Half of FYE 3/2019	1st Half of FYE 3/2020
Cash Flows from Operating Activities	3,209	2,757
Cash Flows from Investing Activities	-1,854	-1,294
Free Cash Flows (Operating CF + Investment CF)	1,354	1,463
Cash Flows from Financing Activities	1,459	-844
Net Increase (Decrease) in Cash and Cash Equivalents	2,671	583
Cash and Cash Equivalents, Beginning of Year	8,930	12,158
Cash and Cash Equivalents, End of Year	11,601	12,741

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

(In millions of yen)	1st Half of FYE 3/2019	1st Half of FYE 3/2020
Capital Expenditures	1,404	1,744
Depreciation & Amortization	1,579	1,646
Research & Development Expenses	742	775

2. Financial Forecast for FYE 3/2020

- Financial Forecast
- Forecast on Sales Revenue and Operating Profit by Business

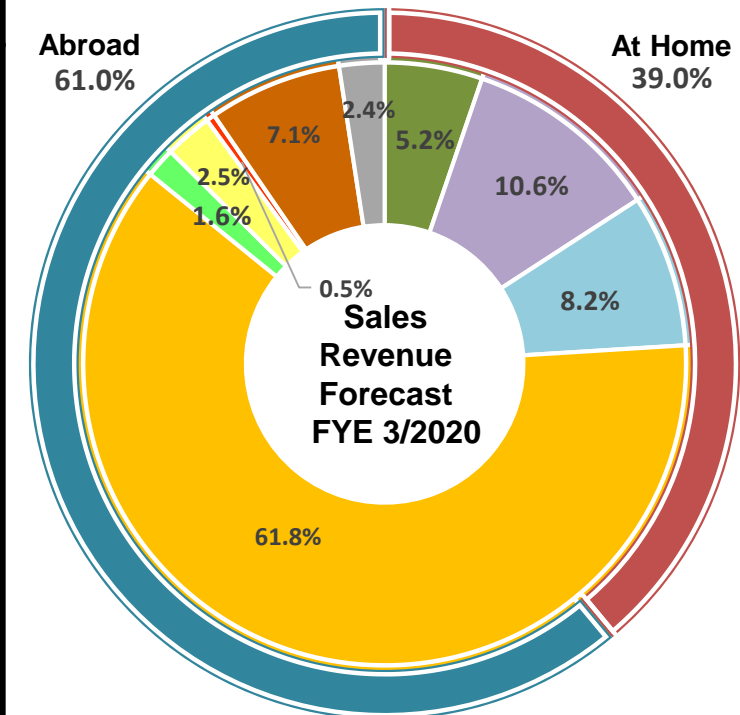
<Financial Forecast>

(In millions of yen)	FYE 3/2019 Actual	FYE 3/2020 Forecast	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	38,384	37,800	-584	-1.5
Gross Profit	7,931	7,550	-382	-4.8
Operating Profit	3,523	2,450	-1,074	-30.5
Ordinary Profit	3,810	2,550	-1,260	-33.1
Profit Attributable to Owners of Parent	2,350	1,700	-651	-27.7
Earnings Per Share (yen)	182.06	131.65	-50.41	-27.7
Dividend (yen)	45	45	-	-
ROE (%)	7.3	5.1	-2.2	-30.1
Capital Expenditures	4,435	4,580	144	3.3
Depreciation & Amortization	3,253	3,490	236	7.3
Research & Development Expenses	1,566	1,770	203	13.0

<Forecast on Sales Revenue and Operating Profit by Business>

	FYE 3/2019 Actual		FYE 3/2020 Forecast		Percentage Increase/Decrease	
	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
High-Purity Chemical Business	33,776	3,782	33,020	2,880	-2.2	-23.9
[High-Purity Chemical Business: Breakdown]	Surface Treatment	2,080	1,730		-16.8	
	Alternatives for CFCs	3,618	3,500		-3.3	
	Batteries	3,629	2,700		-25.6	
	Semiconductors /LCDs	20,093	20,410		1.6	
	Semiconductor Devices	633	530		-16.4	
	Catalysts	904	840		-7.2	
	Gypsum	176	150		-15.0	
	General Products	1,762	2,360		33.9	
	Other	876	800		-8.7	
	Transportation Business	4,382	726	4,570	760	4.3
Medical Business	-	-1,051	-	-1,220	-	-
Other	225	42	210	30	-7.0	-28.8

Sales Revenue Constituent Ratio of High-Purity Chemicals



- Surface Treatment
- Alternatives for CFCs
- Batteries
- Semiconductors/LCDs
- Semiconductor Devices
- Catalysts
- Gypsum
- General Products
- Other

3. STELLA CHEMIFA CORPORATION

- Corporate Profile/Sales Office Locations/Plant Locations
(as of September 30, 2019)
- List of Affiliated Companies
- High-Purity Chemical Business

<Corporate Profile/Sales Office Locations/Plant Locations(as of September 30, 2019)>

◆ Corporate Profile

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	February 1916
Established	February 1944
Capital Fund	4,829,782,512 yen
Representatives	Chairperson, Representative Director: Junko Fukada Representative Director, President and Chief Executive Officer: Aki Hashimoto Representative Director, Senior Managing Executive Officer (Products Management Group): Kiyonori Saka
URL	https://www.stella-chemifa.co.jp/



◆ Sales Offices

Osaka Sales Department	Meiji Yasuda Seimei Osaka Midosuji Bldg. 10F, 4-1-1 Fushimi-machi, Chuo-ku, Osaka City, Osaka
Tokyo Sales Department	Marunouchi Trust Tower North 12F, 1-8-1 Marunouchi, Chiyoda-ku, Tokyo

◆ Factory Addresses

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

<List of Affiliated Companies>

Base	Logo	Corporate Name	Business Segment	Head office
At home		STELLA CHEMIFA CORPORATION	High-Purity Chemical Business	Osaka, Japan
		BLUE EXPRESS, Inc.	Transportation Business	Osaka, Japan
		BLUE AUTO TRUST Co., Ltd.	Other Business	Osaka, Japan
		STELLA PHARMA CORPORATION	Medical Business	Osaka, Japan
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

<High-Purity Chemical Business>

Our products, fluorine compounds, are still used in the manufacture 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	Additive for batteries Lithium hexafluorophosphate	Additive for electrolytes to improve the performance of lithium-ion secondary batteries Electrolyte for 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 ₂ , PbF ₂ , MgF ₂ , AlF ₃ 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

- Features of Our Products and New Products
- Results 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)

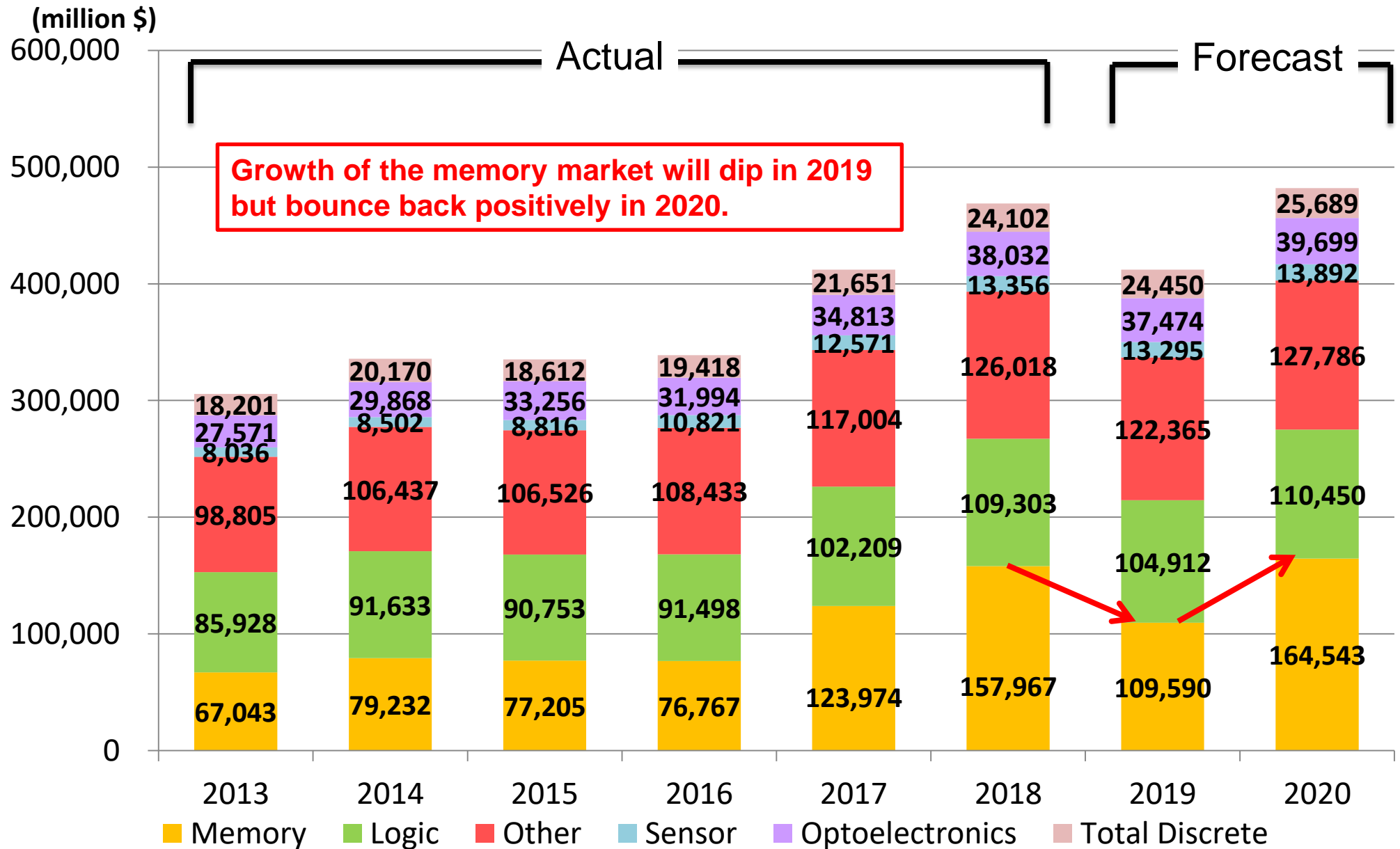
<Features of Our Products and New Products>

- (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.

Product name (Semiconductors and LCDs)	Description
Ultra-high-purity hydrofluoric acid	An ultra-high-purity chemical used for wet cleaning of silicon wafers in manufacturing semiconductors, FPDs, solar batteries, and MEMS
Ultra-high-purity buffered hydrofluoric acid	A chemical mixed with 50% hydrofluoric acid and 40% ammonium fluoride solutions
LL BHF	BHF with various functionalities made possible by adding a surfactant
LAL BHF	BHF that contains a surfactant has enabled it to achieve extended service life and given other advantages by optimizing the concentration of ammonium fluoride at 15% to 25%, about half the concentration of ammonium fluoride contained in conventional BHF.
Ex-LAL BHF	An environmentally friendly BHF with a maximum ammonium fluoride concentration of 5% and added surface-active properties that give it a longer life than any other type of BHF
HSN Series	A functional BHF for etching silicon nitride with selectivity to silicon oxide, which is expected to be mainly used in the next-generation DRAM manufacturing process
LPL BHF	A silicon oxide etchant with minimum damage to silicon or polysilicon film

Joint development of etchant for next-generation non-silicon semiconductor wafers is currently underway.

<Results and Forecast of World Semiconductor Market Scale by Product>



Source: World Semiconductor Trade Statistics Inc. (WSTS)

<Development of a New Memory Market>

Manufacturer	Base Name	Produced Item	Wafer Size	Production Capacity	Plan
Samsung Electronics	X2	3D-NAND	12 inches	70K wafers/month	Planning to increase production from the current 5K wafers/month to 30K wafers/month by the end of 2019. Looking to increase production to 60K wafers/month by the end of 2020.
	P2	DRAM	12 inches	40K wafers/month	Planning to install equipment in February 2020 and produce 40K wafers/month by the end of 2020.
SK Hynix	M15	3D-NAND	12 inches	25K wafers/month	Planning to produce 50K wafers/month by the end of 2020.
	M16	DRAM/NAND	12 inches		Slated to be completed in the second half of 2020.
	C2F	DRAM	12 inches	130K wafers/month	Currently 40K wafers/month.
Kioxia	Y6	3D-NAND	12 inches		Phase 2 trial production started.
	K1	3D-NAND	12 inches		Planning to start phase 1 trial production by the end of 2020 (7.5K wafers/month).
	Y7	3D-NAND	12 inches		Construction to start in December 2020 and be completed in 2022.
Micron Technology	Fab2	DRAM	12 inches		Slated to go partially online at the end of 2019.
	Fab10	3D-NAND	12 inches		Opening ceremony held in August 2019.
	Fab15	DRAM	12 inches		Investments still being made.
	Fab16	DRAM	12 inches		Construction of new building started.
ChangXin Memory Technologies (CXMT)	Phase1	DRAM	12 inches	10K wafers/month	Trial production started.
Yangtze Memory Technology (YMTC)	Phase1	3D-NAND	12 inches	20K wafers/month	Trial production started.

Source: STELLA CHEMIFA

The Chinese market, where large-scale investments have been made in new memory factories, is losing steam in FYE 3/2020 due to the U.S.-China trade friction but it is expected to grow in FYE 3/2021 despite some uncertainties.

Semiconductor-related investments remain strong in Japan, Taiwan, and Korea, and widespread use of 5G, IoT and AI is expected to keep demand for memory products up.

We will implement aggressive sales strategies in the memory market.

<Maintenance and Strengthening of Quality Edge>

◆ SA Grade HF quality ◆

Product technology generation	$\geq 45 \text{ nm}$	28 nm	$\leq 16 \text{ nm}$
Our product grade	SA/SA-X	SA-XX	SA-XXX
Metal impurities level	$< 100 \text{ ppt}$	$< 10 \text{ ppt}$	$< 1 \text{ ppt}$ <small>Succeeded in ultra-high-purity</small>
Management size of particle	$0.2/0.1 \mu\text{m}$	$0.05 \mu\text{m}$	$0.03 \mu\text{m}$

Further strengthening particle management

With Introducing the world's most advanced analytical instruments.



Liquid-borne particle counter

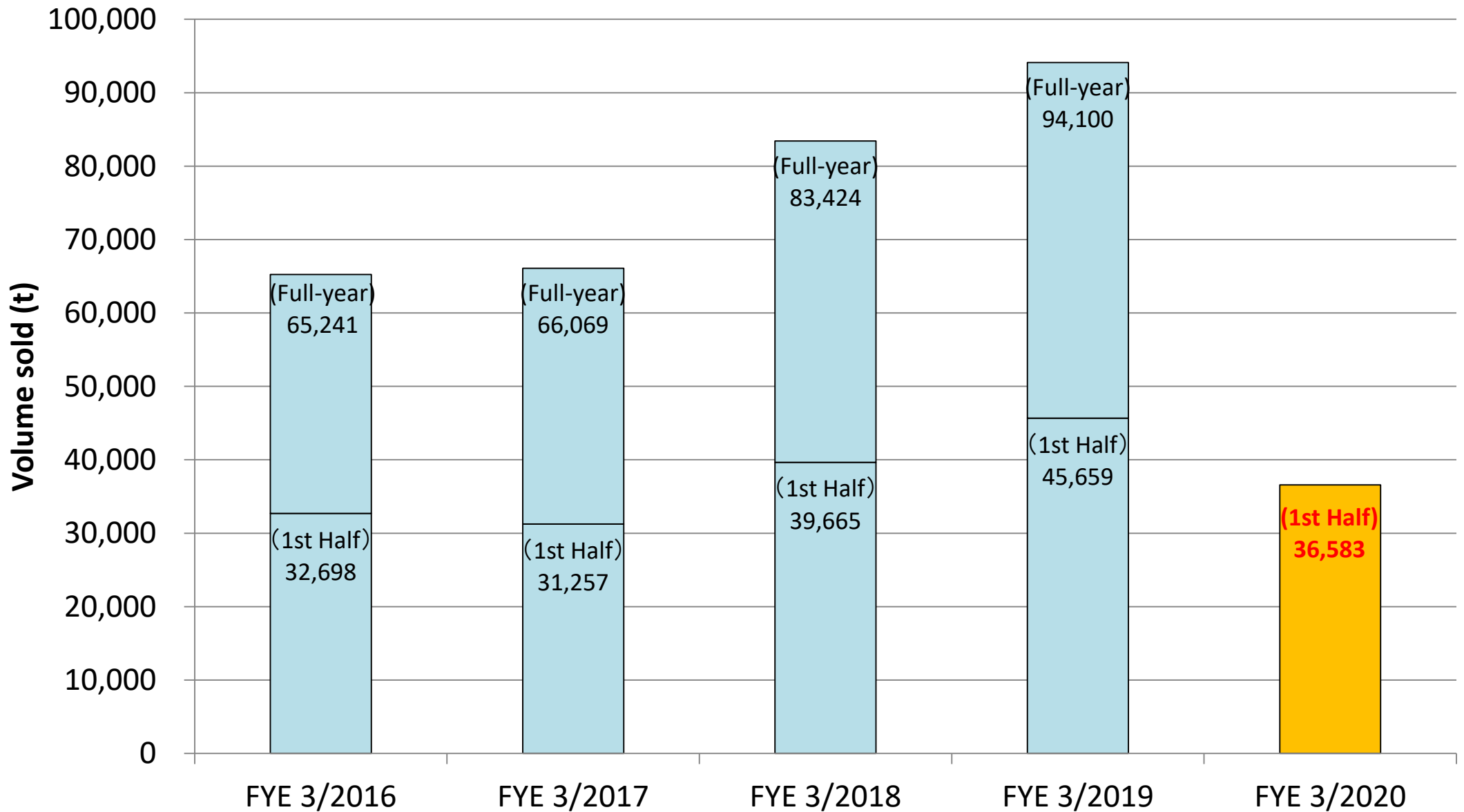
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High resolution ICP-MS

©Thermo Fisher Scientific K. K.

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



Batteries

- Features of Our Products/Business Development in China
- Widespread Use of EVs and the Future of Mobility
- EV Applications Drive LiB Market Growth
- Construction Rush for Giant Battery Plants
- Sales Results and Forecast of Additives for LiB

<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 being used for high-performance lithium-ion secondary batteries.

Product Name (Related to Batteries)	Description
Additive for batteries	Additive for electrolytic solution to improve the performance of lithium-ion secondary batteries
Lithium hexafluorophosphate	Electrolyte for lithium-ion secondary batteries

<Business Development in China>



- Quzhou BDX New Chemical Materials Co., Ltd. (established in December 2015)
- Capital fund: 95 million Chinese yuan (STELLA CHEMIFA's stake: 25%) *As of September 30, 2019
- Some of the facilities used to manufacture electrolytes for lithium-ion secondary batteries were relocated to this joint venture company. (Maximum production capacity: 1,300 t/year)
The joint venture company uses the relocated facilities to produce electrolytes for lithium-ion secondary batteries and sells them in and outside China.

<Widespread Use of EVs and the Future of Mobility>

Environmental (emissions) regulations of different countries and industrial development

⇒ Diffusion policies with subsidies



Contributing to the development of the EV market

Development of a new mobility society

- Enhanced convenience in urban means of transport
- CASE; advancement and electrification of vehicle controls
- Maas; spurring new mobility businesses

CASE (Connected, Autonomous, Shared, Electric)
Maas (Mobility as a Service)

Development of social systems designed for EVs will drive EV sales up



<EV Applications Drive LiB Market Growth>

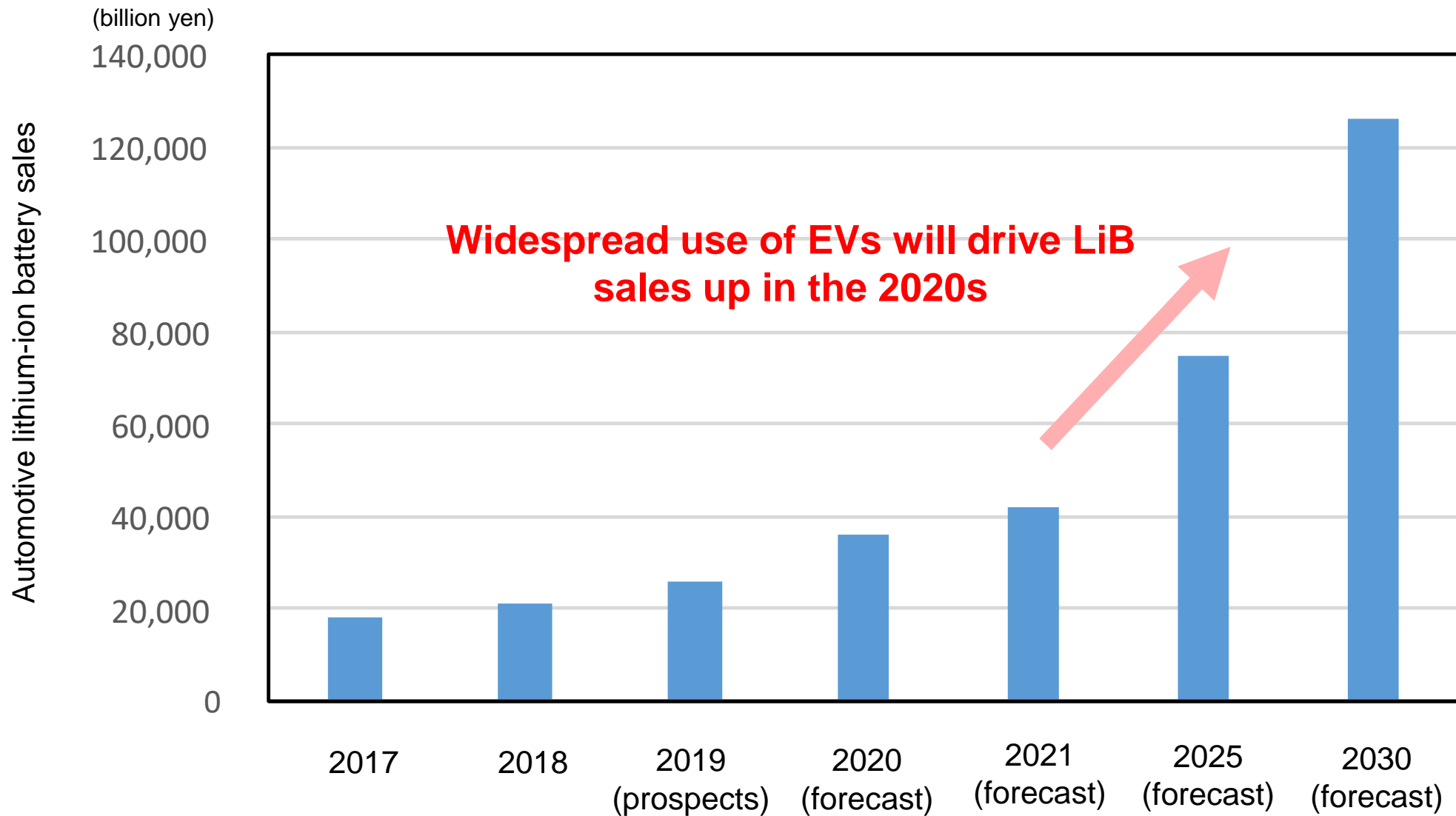


Fig. Change in sales in automotive lithium-ion secondary battery (results and forecasts)
(Source: Materials released by Fuji Keizai)

<Construction Rush for Giant Battery Plants> * Source: STELLA CHEMIFA

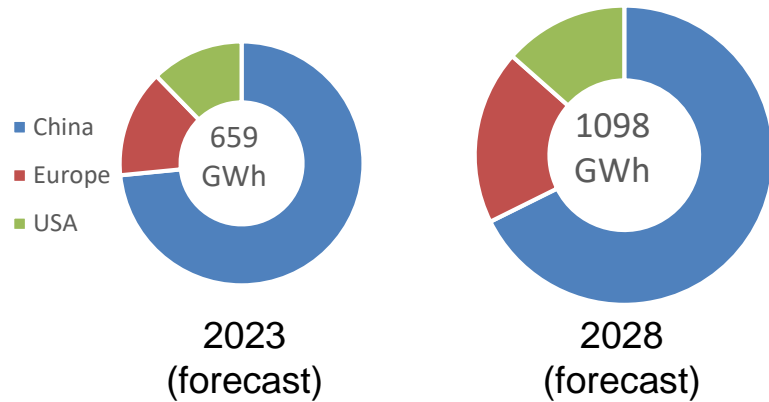
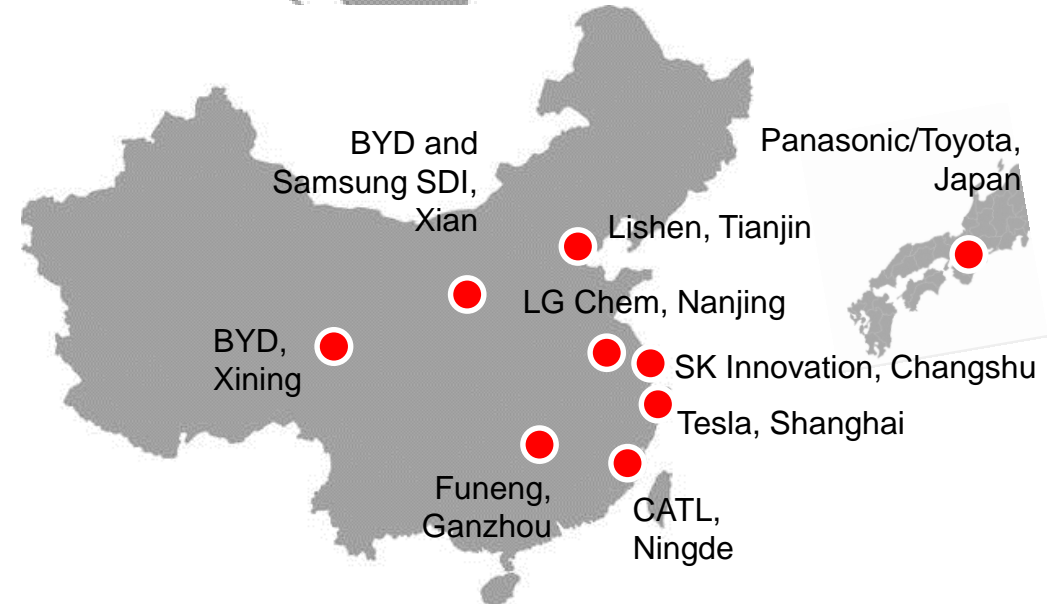
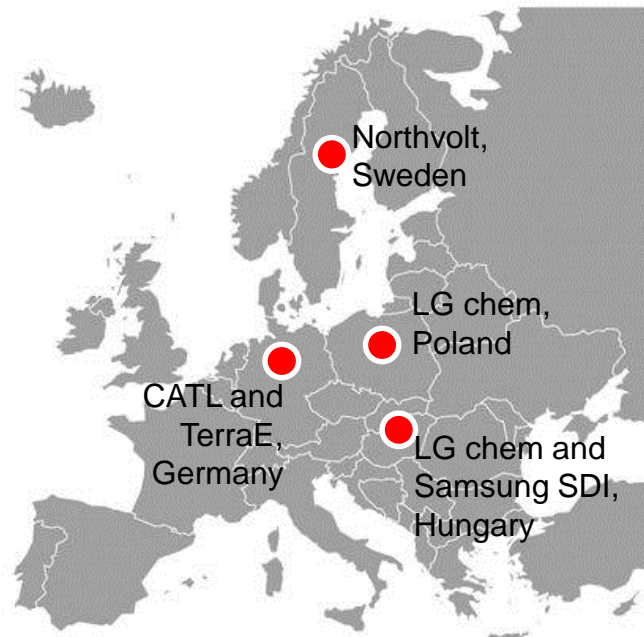
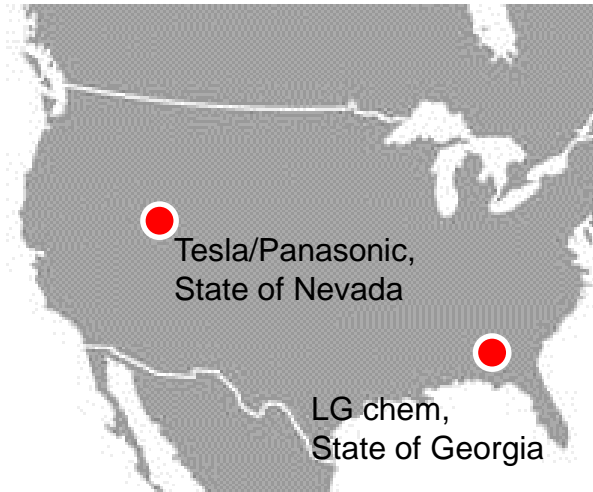
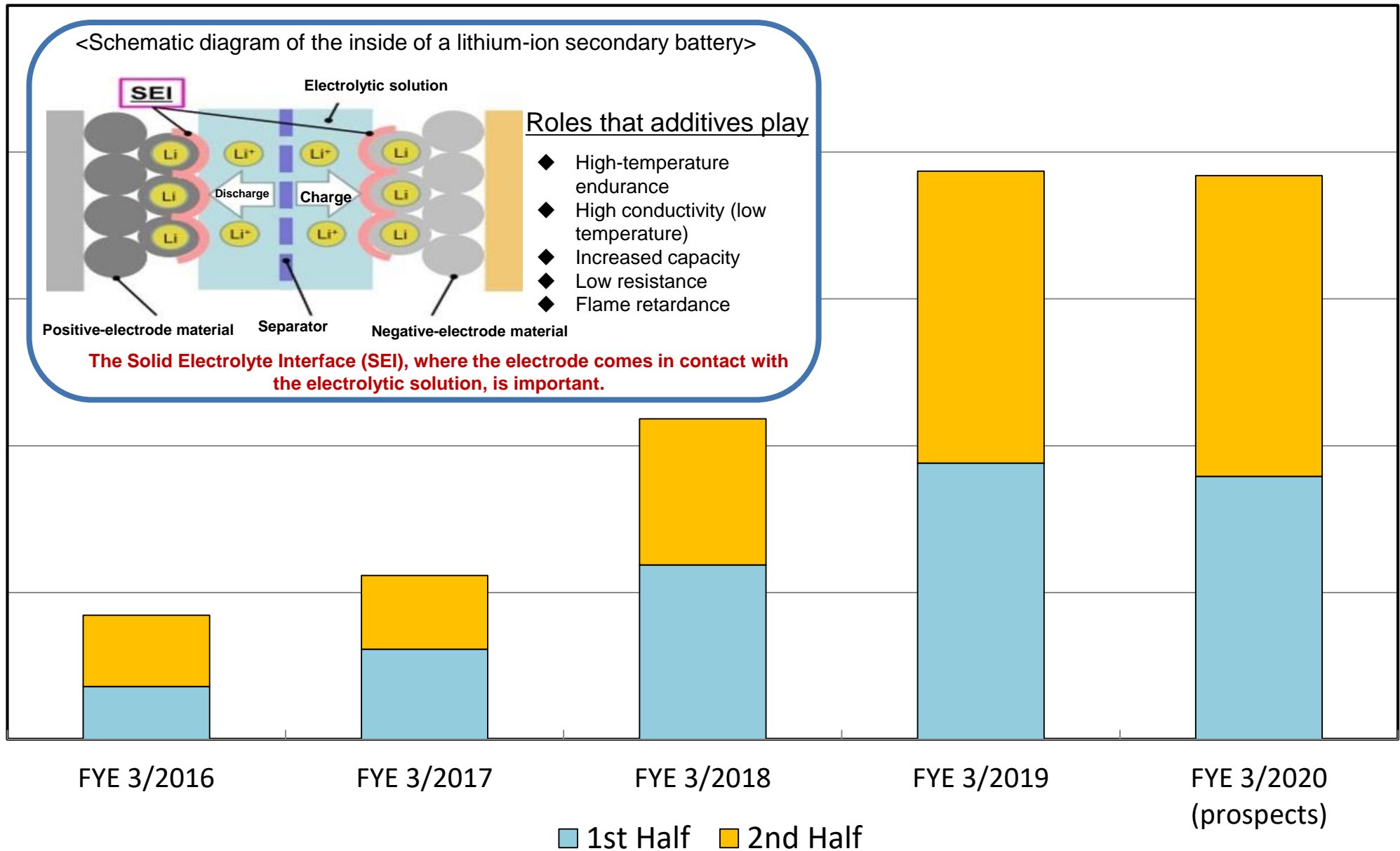


Fig. Change in production capacity for Li-ion secondary batteries by region (output-basis)



The medium-term demand for batteries for EVs will be supplied by Giga plants, which are being constructed around the world

<Sales Results and Forecast of Additives for LiB>



GMP-related

- GMP (Good Manufacturing Practice)
- Oral Care-related ~ Tin Fluoride (SnF_2) ~

< GMP (Good Manufacturing Practice) >

The **GMP inspection** by **USFDA** for tin fluoride, an active ingredient of OTC anticaries drugs, **was completed** in November 2017.



Obtained official approval by a public organization in the US



Started selling GMP-certified products in 2018



Inside Izumi Factory (Izumiotu City, Osaka)

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”

<Oral Care-related ~ Tin Fluoride (SnF₂) ~>

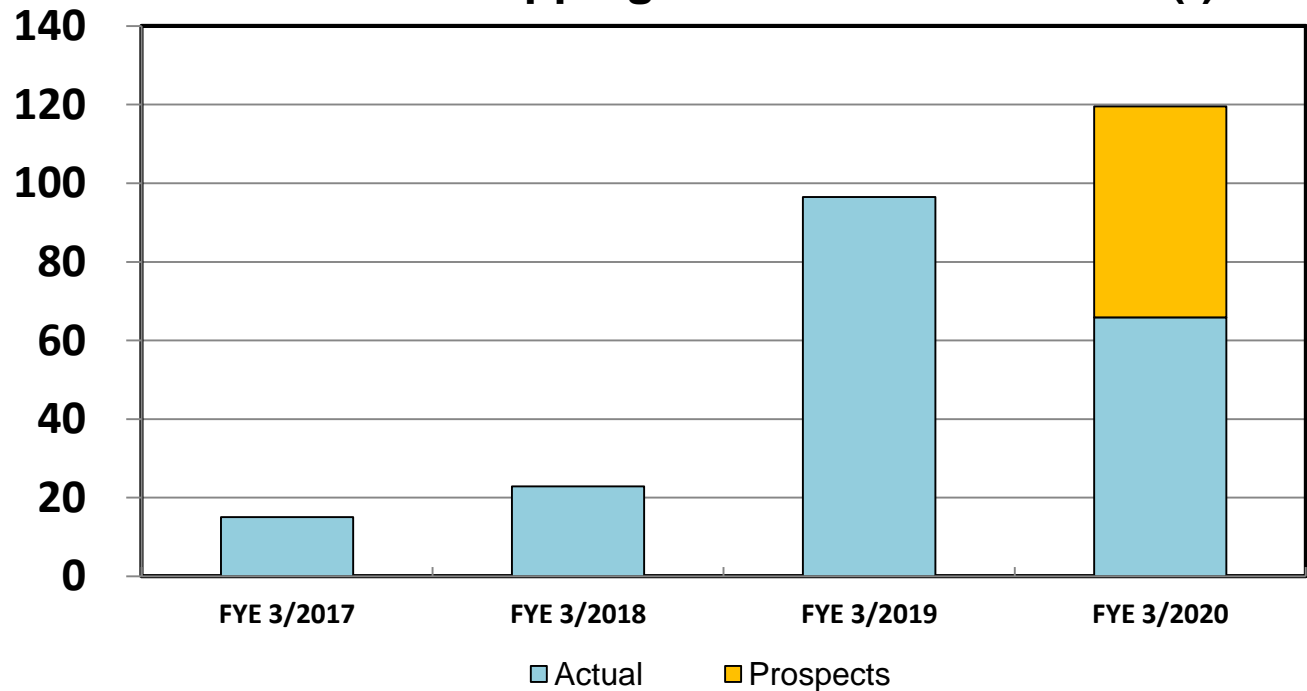
<Actions of fluorine on teeth>

- 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.



Trend in shipping volume of tin fluoride (t)



4. Medical Business

- Corporate Profile (as of September 30, 2019)
- Development of New Radiotherapy Technology -BNCT-
- Establishment of Enrichment Technology/Features of Enriched Boron/Applications of Enriched Boron Compounds
- Filing of Marketing Application of Head and Neck Cancer Drug
- Updates on the Development of SPM-011
- Clinical Trials for Melanoma and Angiosarcoma
- Participation in Development of Imaging Diagnostic Technology - PET Diagnosis -

<Corporate Profile (as of September 30, 2019)>

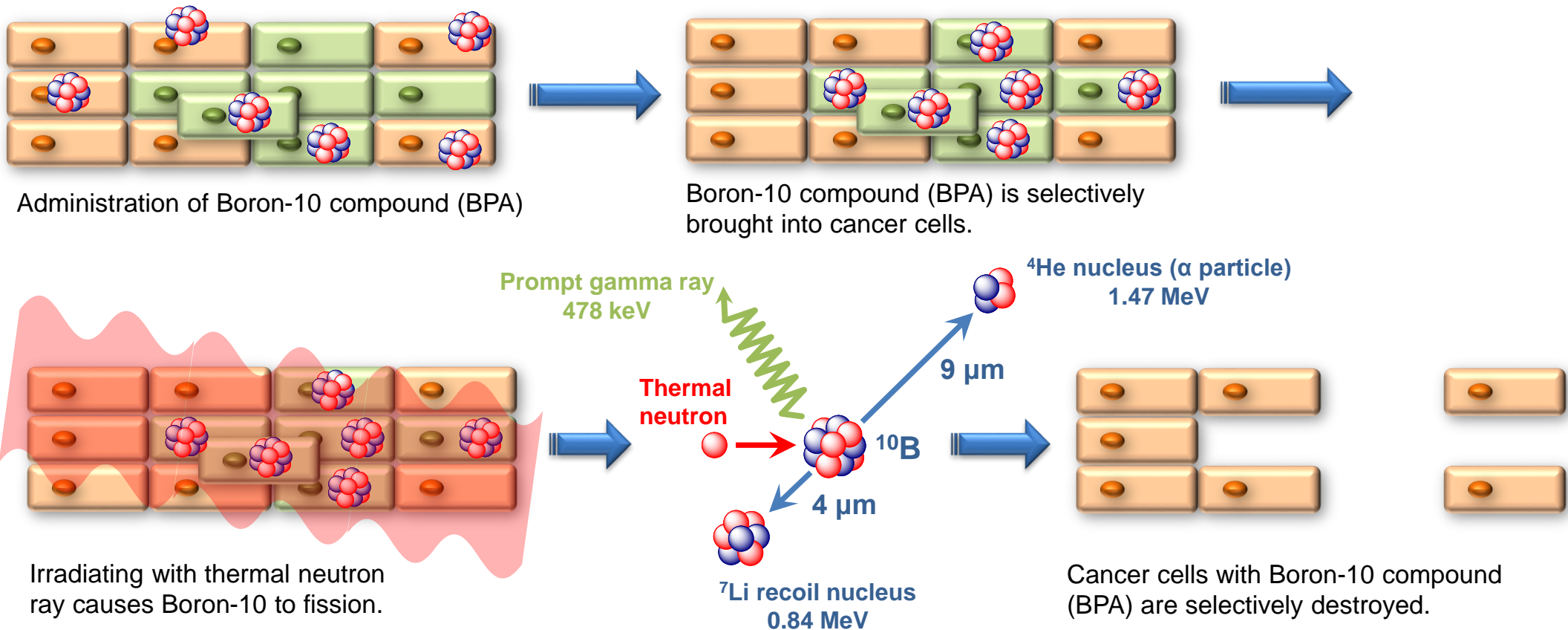
Corporate name	STELLA PHARMA CORPORATION
Head Office	3-2-7 Koraibashi, Chuo-ku, Osaka City, Osaka
Representative	President: Tomoyuki Asano
Established	June 2007
Capital Fund	1,900,000,000 yen
Business Lineup	Research and Development, Manufacture, and Marketing etc. of Drugs and Medical Devices
Shareholders	STELLA CHEMIFA CORPORATION INCJ, Ltd. Sumitomo Heavy Industries, Ltd.
Research Facility	Sakai Drug Discovery Research Center (Naka-ku, Sakai City, Osaka)



STELLA PHARMA

<Development of New Radiotherapy Technology -BNCT->

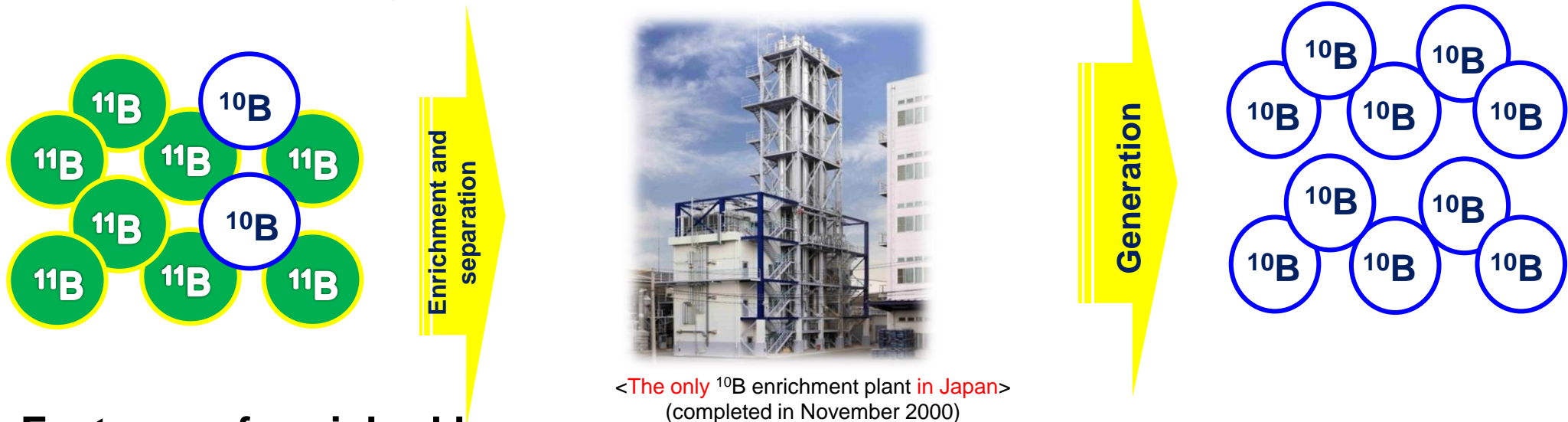
Boron Neutron Capture Therapy (BNCT) is a particle beam radiation therapy, which specifically damages cancer cells by making the best of **nuclear fission reactions** between **boron-10** and **thermal neutrons** with low energy.



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

■ Establishment of enrichment technology

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



■ Features of enriched boron

^{10}B offers properties of remarkably high neutron absorption capacity, and by increasing ^{10}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)**

<Filing of Marketing Application of Head and Neck Cancer Drug>

In October 2019, Stella Pharma filed a marketing application for boron-based drug (Development Code: SPM-011) for BNCT based on the results of a phase II study for head and neck cancer*¹ conducted in Japan.

Since the boron-based drug for treatment of head and neck cancer has been designated as a product subject to the Prioritized Review System for innovative medicines (SAKIGAKE Designation System), it will be given priority in the approval application and reviewed more quickly than usual.

*¹ Head and neck cancer: We conducted a phase II study in Japan for the treatment of unresectable locally recurrent head and neck cancer and unresectable advanced non-squamous cell carcinoma of the head and neck.

Characteristics of head and neck cancer

A group of cancers that develops in the facial area below the brain and above the collarbone, such as the nose, mouth, throat, upper or lower jaw, or ear, which is typically the area where the organs that allow us to lead our normal daily lives are located.

Development of treatment methods that enable the conservation of important organ functions and maintain QOL*² is needed.

*² QOL: QOL, an acronym for quality of life, means the overall quality of the physical, mental, social, and economic aspects of a patient's life.

<Updates on Development of SPM-011>

In order to expand the possibility of BNCT that uses SPM-011, Stella Pharma has established organizations that are conducting R&D on the target diseases and the treatment system used for BNCT.

Brain tumor (recurrent malignant glioma)

A phase II study is underway.
(We are currently conducting an ongoing follow-up study only)

Head and neck cancer (recurrent head and neck cancer)

A marketing application for pharmaceutical product is now under review.

Melanoma/angiosarcoma

A phase I study plan has been accepted

Recurrent high-grade meningioma

A physician-led phase II study is underway.
(An investigational new drug has been provided)

<<Flow chart of planned steps from clinical trial to approval application>>

Phase I study

Phase II study

Approval application

Neutron dose is increased stepwise to check safety.

Verification of the effect at the determined dose.

<Clinical Trials for Melanoma and Angiosarcoma>

Working jointly with Cancer Intelligence Care Systems, Inc. (CICS), Stella Pharma will begin its phase I study for melanoma and angiosarcoma. (The clinical trial plan has been accepted).

The study will use the CICS-1, a new medical device designed for BNCT, which was installed at the National Cancer Center Hospital during a joint development project conducted by CICS and the hospital.

Characteristics of melanoma

Melanoma is a type of skin cancer. While it most commonly occurs on the sole of the foot, it can also develop in other areas of the body.

Characteristics of angiosarcoma

Angiosarcoma is a malignant tumor formed in the inner lining of blood vessels or lymph vessels. It commonly occurs in the skin, especially on the head in elderly people. It's an extremely rare type of cancer and is highly malignant.

Clinical trial team

Clinical trial requester

Stella Pharma
Investigational
new drug

CICS
Medical
device

Request
clinical trial

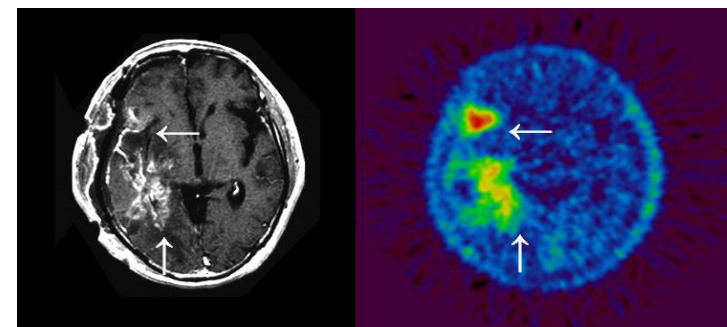
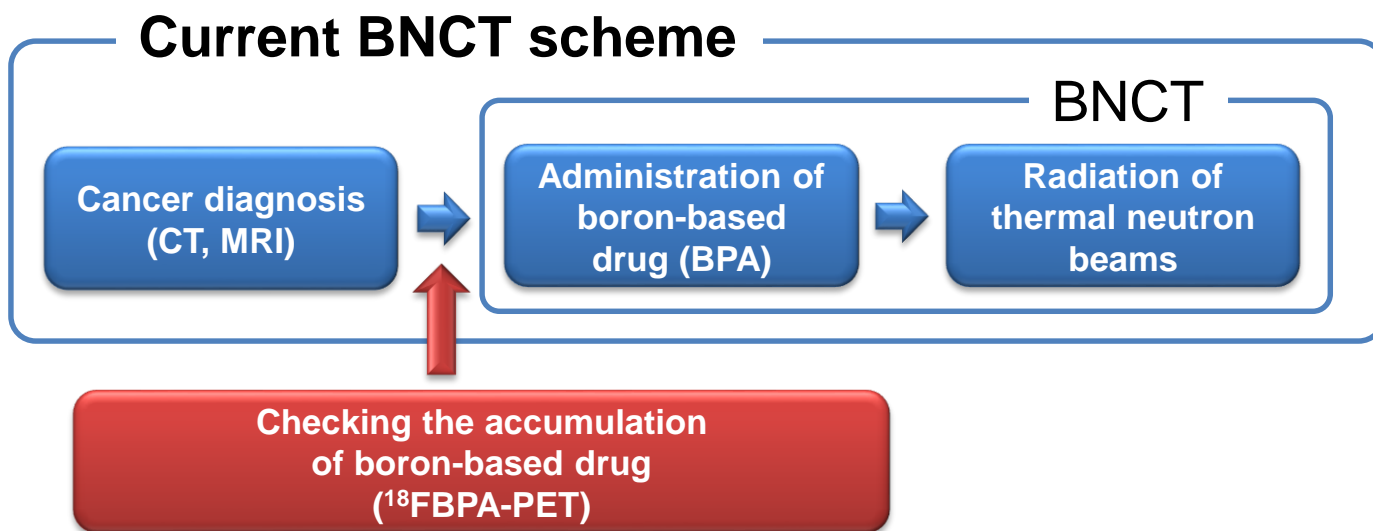
National Cancer Center
Hospital
Radiation/observation

<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}F BPA, which has been studied as a new drug to be used for the technology.

Features of ^{18}F BPA-PET

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



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

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

5. Transportation Business

- Corporate Profile (as of September 30, 2019)
- Transportation System by Cooperation with Domestic Bases
- Overseas Bases
- Activity Policy 1
- Activity Policy 2
- Activity Policy 3

<Corporate Profile (as of September 30, 2019)>

Corporate Name	BLUE EXPRESS CORPORATION
Head Office	10 Ohamanishi-machi, Sakai-ku, Sakai City, Osaka
Representative	Representative Director and President: Kiyonori Saka
Established	June 1991
Capital Fund	350,000,000 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

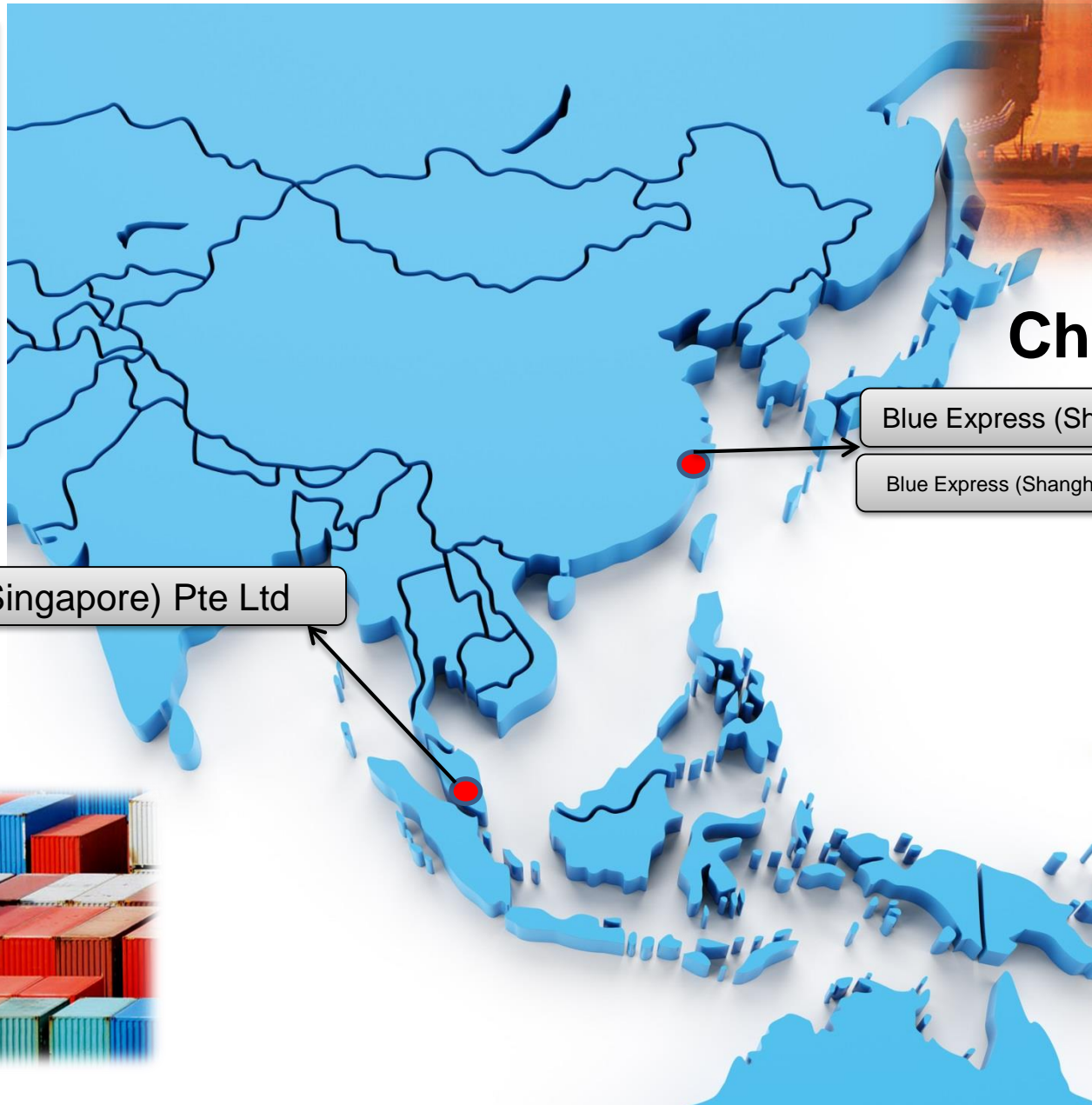


<Overseas Bases>



Singapore

Stella Express (Singapore) Pte Ltd



China (Shanghai)

Blue Express (Shanghai) International Trade Inc.

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



<Activity Policy 1>

1. To enhance compliance capability

- To stop reckless driving and overworking through the use of dashboard cameras and digital tachographs, and revisions to fleet tracking operations, etc.
- To improve long-haul transportation (consider changing mode of transport) in order to mitigate excessive driver workload

- Our mission is to pioneer the future of logistics services with an eye to discovering a better tomorrow and an undying commitment to the pursuit of safety and sustainability.

- ▶ All our offices have been G-Mark certified (given to business establishments with excellent safety standards)

- ▶ Obtained ISO 14001

Certificate No.: JQA-EM5789

Certified locations: Headquarter, Sanpo Office Transport Section
Yokohama Office, and Warehouse Division

Operations covered: Freight transportation, warehousing,
container services, and customs clearance



- Ensure compliance across the Blue Express Group

- ▶ Blue Auto Trust Co., Ltd.
- ▶ Blue Express (Shanghai) International Freight Forwarding Co., Ltd.
- ▶ Blue Express (Shanghai) International Trade Inc.
- ▶ Stella Express (Singapore) Pte Ltd

<Activity Policy 2>

2. To carry out intra-group operations with a focus on safety and accuracy

- Working in line with Stella Chemifa's business policies, make investments aimed at relocating and expanding offices that serve as our transportation hubs and systematically hire drivers and customs specialists with an eye to enhancing the safety and accuracy of intra-group logistics.
- To work on the effective use of buildings to prepare for future transport volume growth.

★ Offices planning to relocate/expand

- (1) Sendai Office
- (2) Nagoya Office
- (3) Kitakyushu Office



Headquarters Sanpo Office
(completed in April 2018)



Kitakyushu Office
(completed in October 2014)



Headquarters new hazardous materials
warehouse
(completed in December 2018)

<Activity Policy 3>

3. To seek international intermodal logistics services and make business deals with a keen focus on profits.

- To, as a hazardous materials transport expert, seek added value for international intermodal logistics services, which includes transport, customs clearance, and container services.
- To make business deals with a keen focus on profits
- To focus on business transactions aimed at ensuring optimal operations



Transportation

Storage

- High-purity chemicals

- Poisonous and deleterious substances

- Hazardous materials

- High-pressure gas

- General cargo, etc.

Customs clearance

Container services

6. Future Activities

- R&D Initiatives
- Functional Fluoride 1
- Functional Fluoride 2
- Future Energy Devices 1
- Future Energy Devices 2
- Future Energy Devices 3
- Chemicals for Future Semiconductor Device Manufacturing

<R&D Initiatives>

Functional Fluoride

Applying fluorine technology to light-emitting devices, etc.



Future Energy Devices

Development and proposal of materials for next future batteries



Chemicals for Future Semiconductor Device Manufacturing

For LSI miniaturization technology that supports an IT-driven society

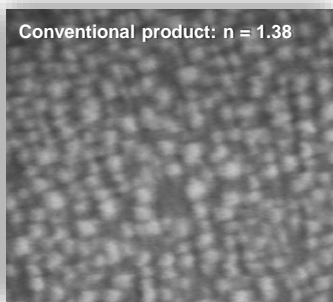


<Functional Fluoride 1>

Low refractive index materials

Fluoride nanoparticles with low refractive index for antireflection coatings

Ensures antireflection and other optical functions of cutting-edge devices without compromising the design



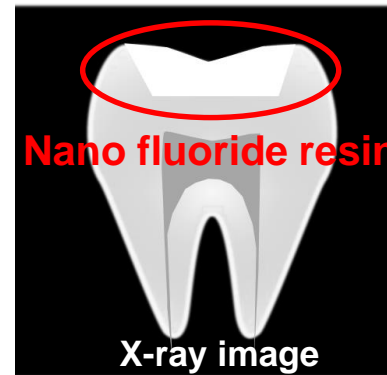
Development of Fluoride nanoparticle dispersion with low refractive index

Newly developed product: $n \leq 1.35$

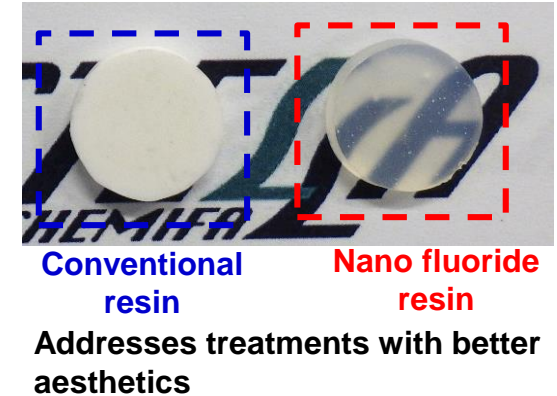
Dental materials

Fluoride nanoparticles for dental composite resins

(1) Radiolucency



(2) Transparency



Addresses treatments with better aesthetics

Easy-to-identify boundary
Between dentino and dental fillings

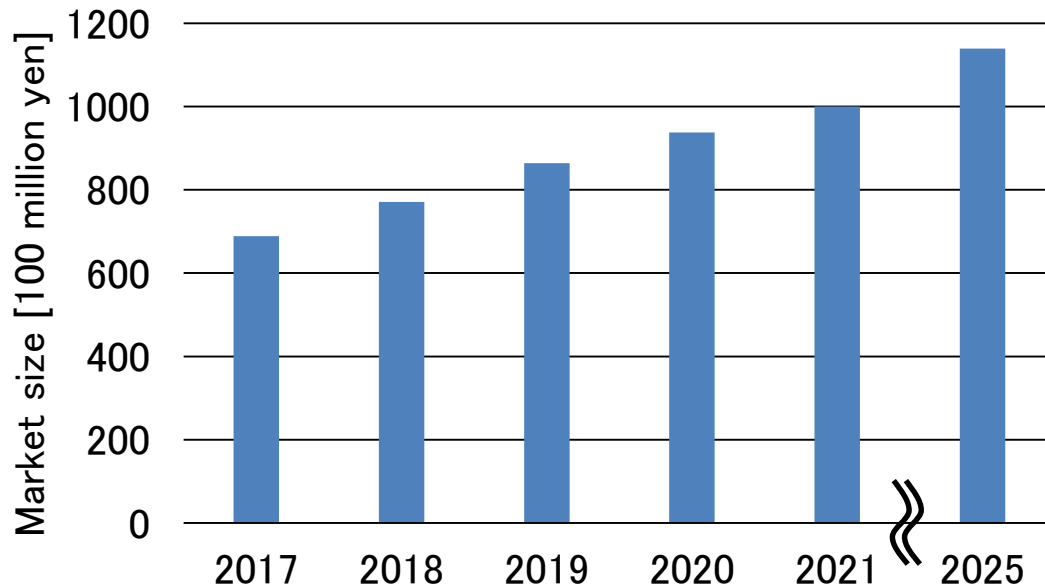
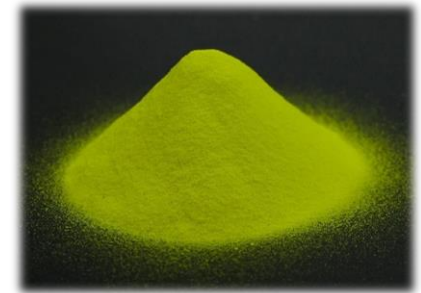


Applicable to CAD/CAM blocks

<Functional Fluoride 2>

Phosphor Materials

Development of high-efficiency, long-life fluoride phosphor materials utilizing our company's core technology



Source: 2018 Comprehensive Survey on LED/LD Market (Fuji Chimera Research Institute, Inc.)

Market Forecast of Phosphors for LEDs (prospect for 2018 and later)

Demands also increasing for Mini LEDs and PIDs (Public Information Displays)

Under evaluation by customers



No light emission

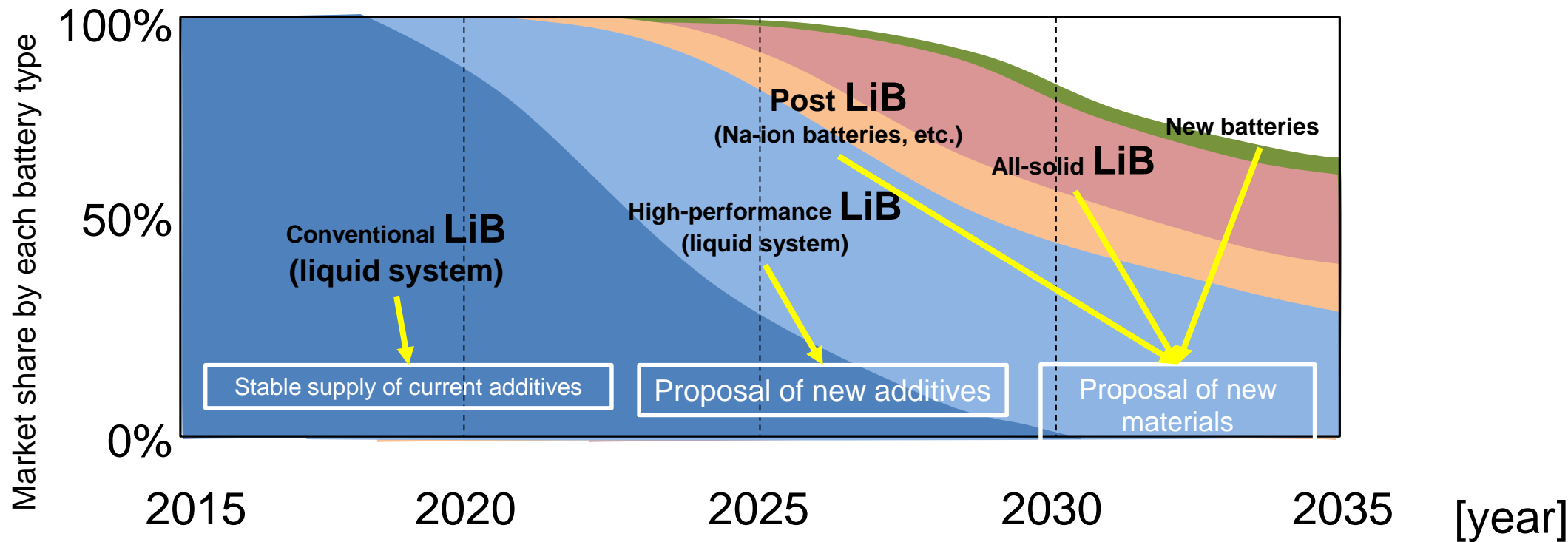


Light emitting state

Our fluoride phosphor materials

<Future Energy Devices 1>

Approaches to the Battery Roadmap



Source: STELLA CHEMIFA

Fig. Image for future changes in battery technology

Focusing on the development of new materials for post lithium-ion battery technologies

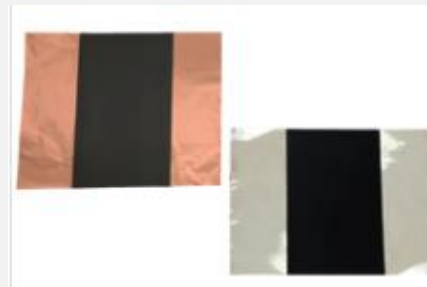
<Future Energy Devices 2>

Development of high-performance LiB materials

Improvement of battery performance and durability in EV batteries



Positive electrode
/
Negative electrode



Proposing materials for electrode

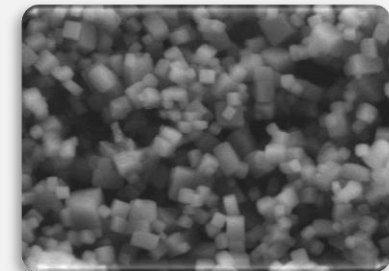
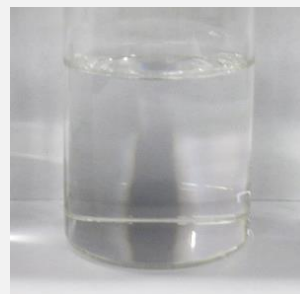


Image of electrode additive

Electrolyte



Proposing materials for electrolyte



Appearance of a new additive

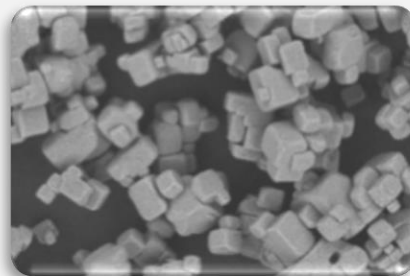
Evaluation is ongoing for proposed materials that have been fine-tuned to customers' battery systems.

<Future Energy Devices 3>

Proposing materials for post lithium-ion secondary batteries

Metal-ion secondary batteries

High-purity electrolytes for other types of ion batteries, such as sodium- or calcium-ion batteries



High-purity electrolyte

Mass production of high-purity electrolytes

All-solid lithium-ion secondary batteries

All-solid lithium-ion battery materials designed for enhanced safety



Material for all-solid battery electrode

Evaluation of products under development following the establishment of evaluation system

Fluoride-ion secondary batteries

Fluoride-ion conductor and electrode materials



Fluoride-ion conductor material

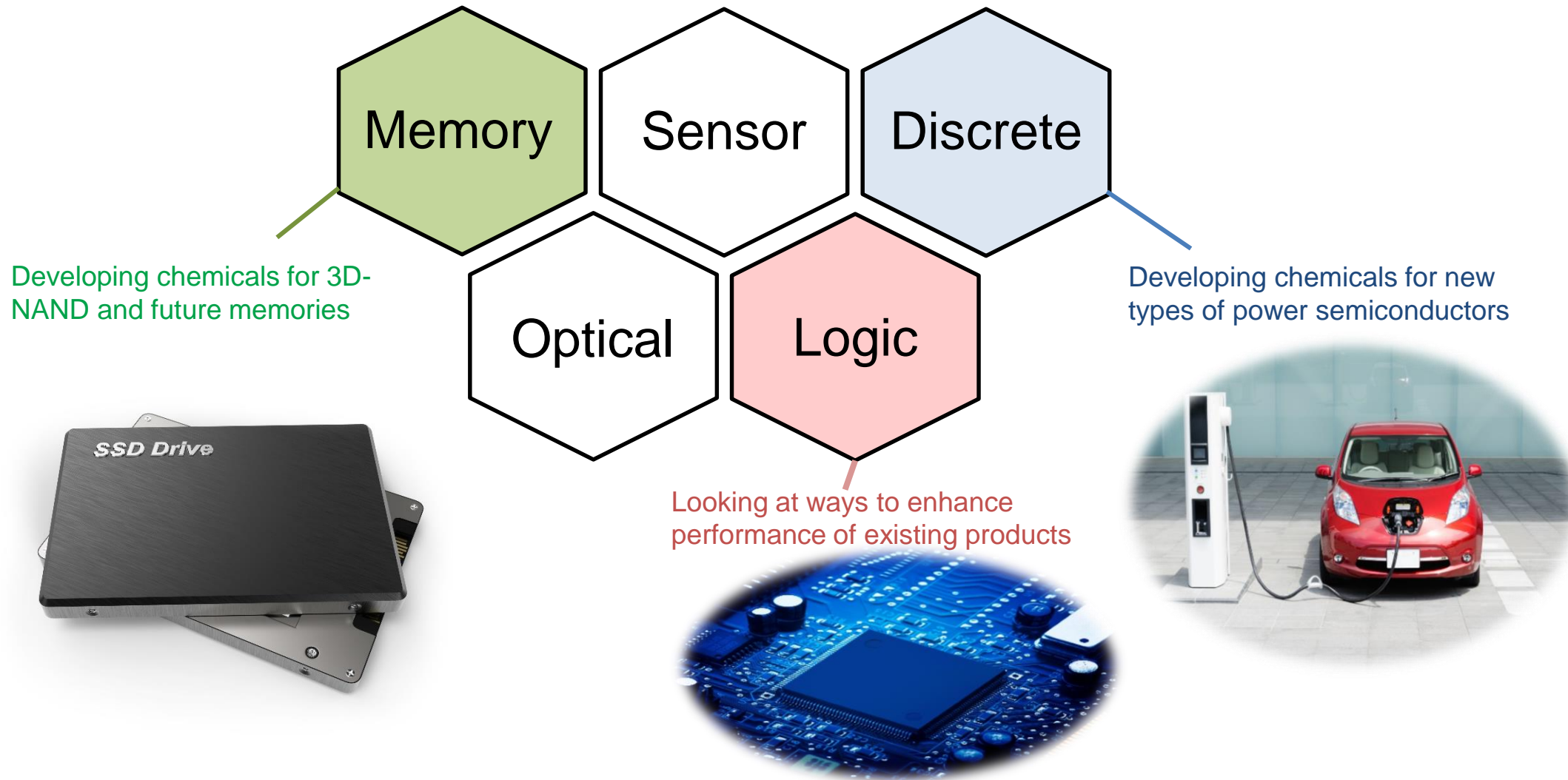


Molded electrolyte

Applying core technologies to make candidate materials for more future secondary batteries

<Chemicals for Future Semiconductor Device Manufacturing>

Working with customers and universities to develop chemicals for future semiconductor device manufacturing



Corporate slogan

Beyond the Chemical
Beyond the Chemical

We are drawing upon our 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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