

Financial Results for FYE 3/2017

Securities code: 4109

1. Financial Results for FYE 3/2017

- 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)>

(In millions of yen)	FYE 3/2017		FYE 3/2016	YoY		Vs. Forecast	
	Actual	Forecast*	Actual	Increase/ Decrease	Percentage Increase/ Decrease	Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	29,850	29,331	27,509	2,340	8.5	519	1.7
Operating Profit	4,372	3,909	1,388	2,983	214.8	463	11.8
Ordinary Profit	4,154	3,767	1,044	3,110	297.9	387	10.2
Profit Attributable to Owners of Parent	2,824	2,633	1,323	1,500	113.3	191	7.2

*Announced March 1, 2017

(In millions of yen)	FYE 3/2017	FYE 3/2016	Increase/ Decrease
Total Assets	52,081	47,027	5,053
Equity Capital	28,078	24,909	3,169
Interest-bearing Liabilities	13,967	13,975	-7

<Consolidated Statement of Income>

(In millions of yen)	FYE 3/2017	FYE 3/2016	YoY	
			Increase/ Decrease	Percentage Increase/ Decrease
Sales Revenue	29,850	27,509	2,340	8.5
Gross Profit	8,199	4,768	3,431	72.0
Gross Profit Margin (%)	27.5	17.3	-	-
SG&A	3,826	3,379	447	13.2
Operating Profit	4,372	1,388	2,983	214.8
Operating Profit Margin (%)	14.6	5.0	-	-
Ordinary Profit	4,154	1,044	3,110	297.9
Profit before Income Taxes	3,815	1,519	2,295	151.1
Profit Attributable to Owners of Parent	2,824	1,323	1,500	113.3

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

■ Non-operating Profit and Loss

(In millions of yen)	FYE 3/2017	FYE 3/2016
Non-operating Profit	438	694
Interest income	13	28
Dividend income	2	2
Gain on valuation of derivatives	282	-
Foreign exchange gains	-	460
Other	139	202
Non-operating Expenses	657	1,039
Interest expenses	52	62
Share of loss of entities accounted for using equity method	5	129
Loss on valuation of derivatives	-	768
Foreign exchange losses	417	-
Other	181	77

■ Extraordinary Profit and Loss

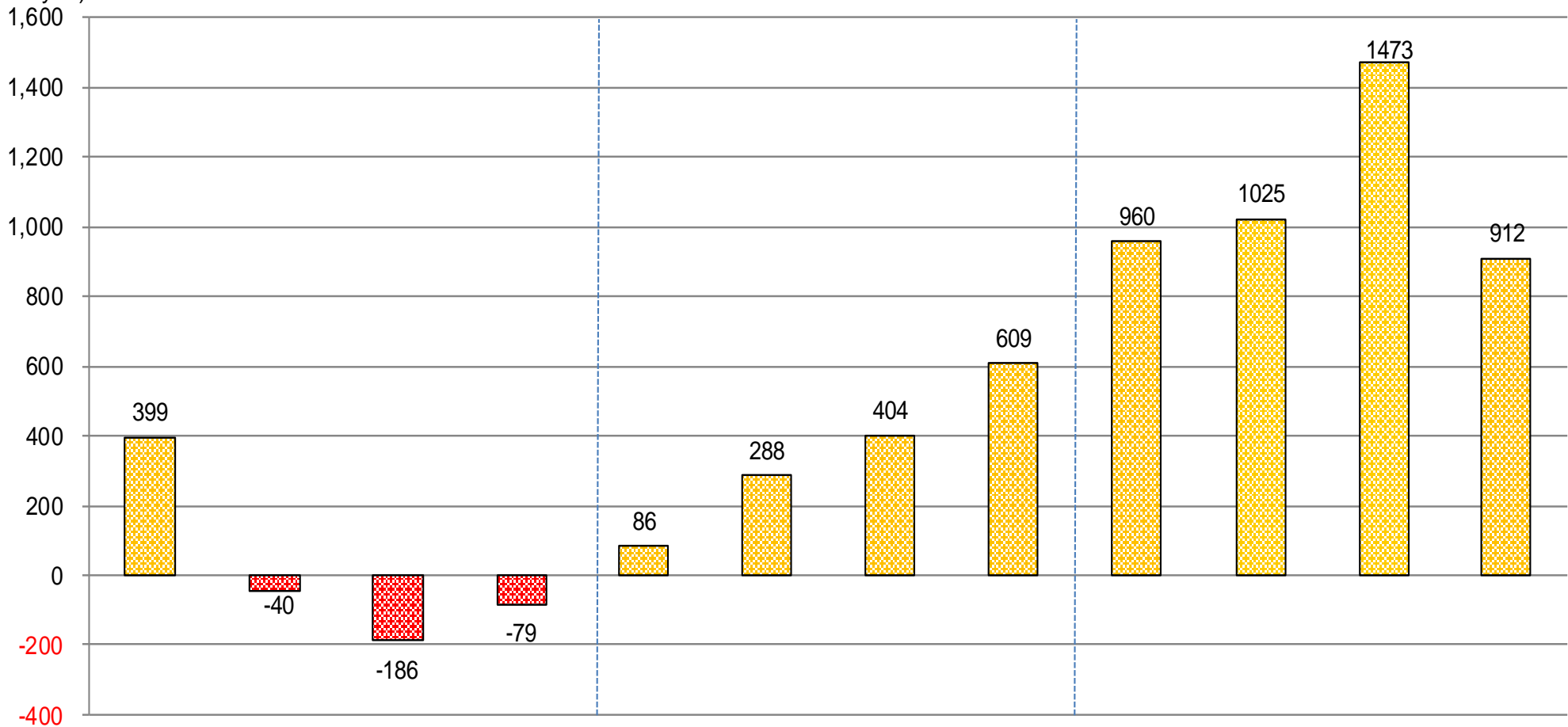
(In millions of yen)	FYE 3/2017	FYE 3/2016
Extraordinary Profit	31	508
Gain on sales of non-current assets	31	22
Subsidy income	-	486
Extraordinary Losses	369	33
Loss on abandonment of non-current assets	271	25
Loss on sales of non-current assets	0	7
Loss on sales of investment securities	0	0
Impairment loss	98	-

<Sales Revenue and Operating Profit by Business>

(In millions of yen)		FYE 3/2017		FYE 3/2016		Percentage Increase/Decrease	
		Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
High-purity Chemical Business		25,501	4,422	23,087	1,390	10.5	218.0
[High-purity Chemical Business: Breakdown]	Surface Treatment	2,033		2,097		-3.1	
	Alternatives for CFCs	2,463		2,023		21.7	
	Batteries	5,072		2,989		69.7	
	Semiconductors/LCDs	12,310		12,224		0.7	
	Semiconductor Devices	527		545		-3.2	
	Catalysts	854		846		1.0	
	Gypsum	94		107		-12.2	
	General products	1,342		1,461		-8.1	
	Other	803		791		1.4	
Transportation Business		4,143	698	4,195	664	-1.2	5.1
Medical Business		-	-792	-	-691	-	-
Other Business		204	30	226	6	-9.5	345.5

<Quarterly Operating Profit>

(In millions of yen)



(In millions of yen)	FYE 3/2015				FYE 3/2016				FYE 3/2017			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Sales Revenue	7215	6916	6905	7305	6745	7057	6789	6918	7187	6757	7941	7963
Operating Profit	399	-40	-186	-79	86	288	404	609	960	1025	1473	912
Operating Profit Margin	5.5%	-0.6%	-2.7%	-1.1%	1.3%	4.1%	6.0%	8.8%	13.4%	15.2%	18.6%	11.5%

<Consolidated Balance Sheet>

(In millions of yen)	FYE 3/2017	FYE 3/2016	Increase/Decrease
Current Assets	28,069	22,277	5,792
Cash and Deposits	14,361	10,454	3,907
Notes and Accounts Receivable - trade	7,867	7,075	792
Non-current Assets	24,011	24,750	-739
Property, Plant and Equipment	22,072	23,076	-1,003
Intangible Assets	129	146	-17
Investments and Other Assets	1,808	1,527	281
Current liabilities	12,566	11,189	1,377
Short-term Loans Payable	2,320	3,648	-1,328
Long-term Loans Payable within 1 year	3,684	3,386	297
Non-current liabilities	9,998	9,270	727
Bonds Payable	2,000	-	2,000
Long-term Loans Payable	5,962	6,939	-977
Net Assets	29,516	26,568	2,948
Shareholders' Equity	27,771	24,413	3,357
Liabilities and Net Assets	52,081	47,027	5,053

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

(1) Consolidated Statement of Cash Flows

	FYE 3/2017	FYE 3/2016
(In millions of yen)		
Cash flows from operating activities (*1)	5,341	5,228
Cash flows from investing activities (*2)	-1,814	-1,404
Free Cash Flows (*1 + *2)	3,526	3,823
Cash flows from financing activities	531	1,850
Net increase (decrease) in cash and cash equivalents	4,014	5,612
Cash and cash equivalents, beginning of year	10,154	4,542
Cash and cash equivalents, end of year	14,169	10,154

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

	FYE 3/2017	FYE 3/2016
(In millions of yen)		
Capital Expenditures	2,328	1,302
Depreciation & Amortization	3,117	3,525
Research & Development Expenses	1,274	1,163

2. Financial Forecast for FYE 3/2018

- Financial Forecast
- Forecast by Segment

<Financial Forecast>

(In millions of yen)	FYE 3/2018 Full-year forecast	FYE 3/2017 Full-year results	FYE 3/2016 Full-year results
Sales Revenue	30,472	29,850	27,509
Operating Profit	3,350	4,372	1,388
Ordinary Profit	3,323	4,154	1,044
Profit Attributable to Owners of Parent	2,497	2,824	1,323
Current Net Profit Per Share	203.01	234.56	110.33
Capital Expenditures	3,010	2,328	1,302
Depreciation & Amortization	3,309	3,117	3,525
Research & Development Expenses	1,557	1,274	1,163

<Financial Forecast by Segment>

(In millions of yen)		FYE 3/2018 Full-year forecast		FYE 3/2017 Full-year results		FYE 3/2016 Full-year results	
		Sales Revenue	Operating Profit	Sales Revenue	Operating Profit	Sales Revenue	Operating Profit
High-purity Chemical Business		26,016	3,687	25,501	4,422	23,087	1,390
[High-purity Chemical Business: Breakdown]	Surface Treatment	1,808		2,033		2,097	
	Alternatives for CFCs	2,089		2,463		2,023	
	Batteries	6,438		5,072		2,989	
	Semiconductors/ LCDs	12,304		12,310		12,224	
	Semiconductor Devices	464		527		545	
	Catalysts	814		854		846	
	Gypsum	80		94		107	
	General products	1,374		1,342		1,461	
	Other	640		803		791	
Transportation Business		4,269	635	4,143	698	4,195	664
Medical Business		-	-1,019	-	-792	-	-691
Other Business		187	31	204	30	226	6

3. STELLA CHEMIFA CORPORATION

- Corporate Profile/Sales Office Locations/Plant Locations (as of March 31, 2017)
- List of Affiliated Companies
- High-purity Chemical Business

<Corporate Profile/Sales Office Locations/Plant Locations (as of March 31, 2017)>

◆ Corporate profile

Corporate name: STELLA CHEMIFA CORPORATION
 Head Office: Midosuji MTR Building 3F, 3-6-3 Awaji-machi, Chuo-ku, Osaka
 Founded: February 1916
 Established: February 1944
 Capital: 3,688,260,564 yen
 Representatives: Chairperson, Representative Director: Junko Fukada
 President, Representative Director: Aki Hashimoto
 URL: <http://www.stella-chemifa.co.jp/>



◆ Sales office

Osaka Sales Department: Midosuji MTR Building 4F, 3-6-3 Awaji-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	Location
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 (Singapore) 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_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

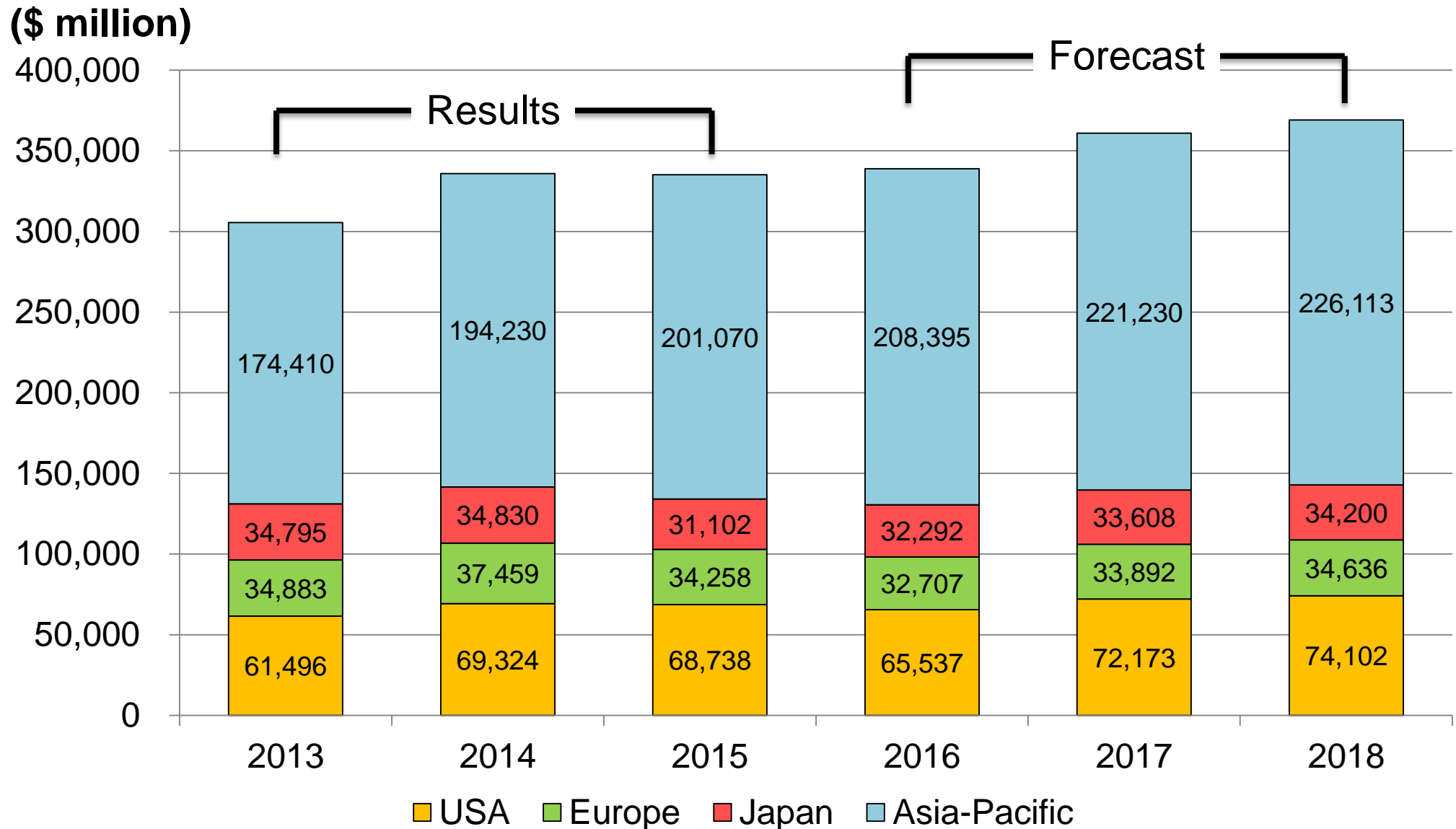
- Features of our products
- Result and Forecast of world semiconductor market scale by regions
- New business development in growing market
- Maintenance and strengthening of quality edge
- Change of shipping volume of high-purity hydrofluoric acid (semiconductors and LCDs)

<Features of our 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.
BHF (buffered hydrofluoric acid)	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.
LA BHF	BHF which etches silicon oxide at high speed.
HSN Series	Silicon oxide etchant with High Selectivity for silicon nitride.
LPL BHF (tentatively called)	Silicon oxide etchant without damaging to silicon and poly-silicon absolutely.

<Results and forecast of world semiconductor market scale by regions>



Source: World Semiconductor Trade Statistics Inc. (WSTS)

<New business development in growing market>

● Main new semiconductor factories planned in China

Manufacturer	Place of construction	Produced item	Wafer size	Production capacity	Start of production
TSMC	Nanjing	Logic IC	12 inches	200,000 wafers/month	Second half of FY 2018
UMC	Amoy	Logic IC	12 inches	First stage: 50,000 wafers/month (completed) Second stage: 50,000 wafers/month	Second stage: Mid-FY 2017
Fujian Electronics & Information (Technology licensed by UMC)	Quanzhou	DRAM	12 inches	First stage: 60,000 wafers/month Second stage: 60,000 wafers/month	Second half of FY 2018
Globalfoundries	Chongqing	IC	12 inches	15,000 wafers/month	FY 2017
	Chengdu	—	12 inches	several tens of thousands of wafers/month	FY 2019
Yangtze River Storage Technology (YRST) *Tsinghua Unigroup acquired capital in XMC.	Wuhan	3D-NAND DRAM	12 inches	20,000 wafers/month → 300,000 wafers/month	FY2018 FY2020
Nexchip (PSC)	Hefei	Logic IC	12 inches	—	FY 2018 to FY 2019

additionally, large-scale investments are planned on new semiconductor factories in China.

[SMIC (Beijing, Shanghai, Tianjin, and Shenzhen), HLMC (Shanghai), Intel (Dalian), etc.]

Furthermore, expansion factory by Samsung (Xian), CMOS image sensor factory (Huaiyin) by Tacoma and Tower Jazz, and others, are also under conception stage, suggesting active launch of overseas manufacturers into China.

We have proceeded to the China semiconductor development with the effective strategies.

<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 μm	0.05 μm	0.03 μm <small>Further strengthening particle management</small>

We respond the needs of semiconductor manufacturers with introducing the World's most advanced analytical instruments.



Liquid-borne particle counter

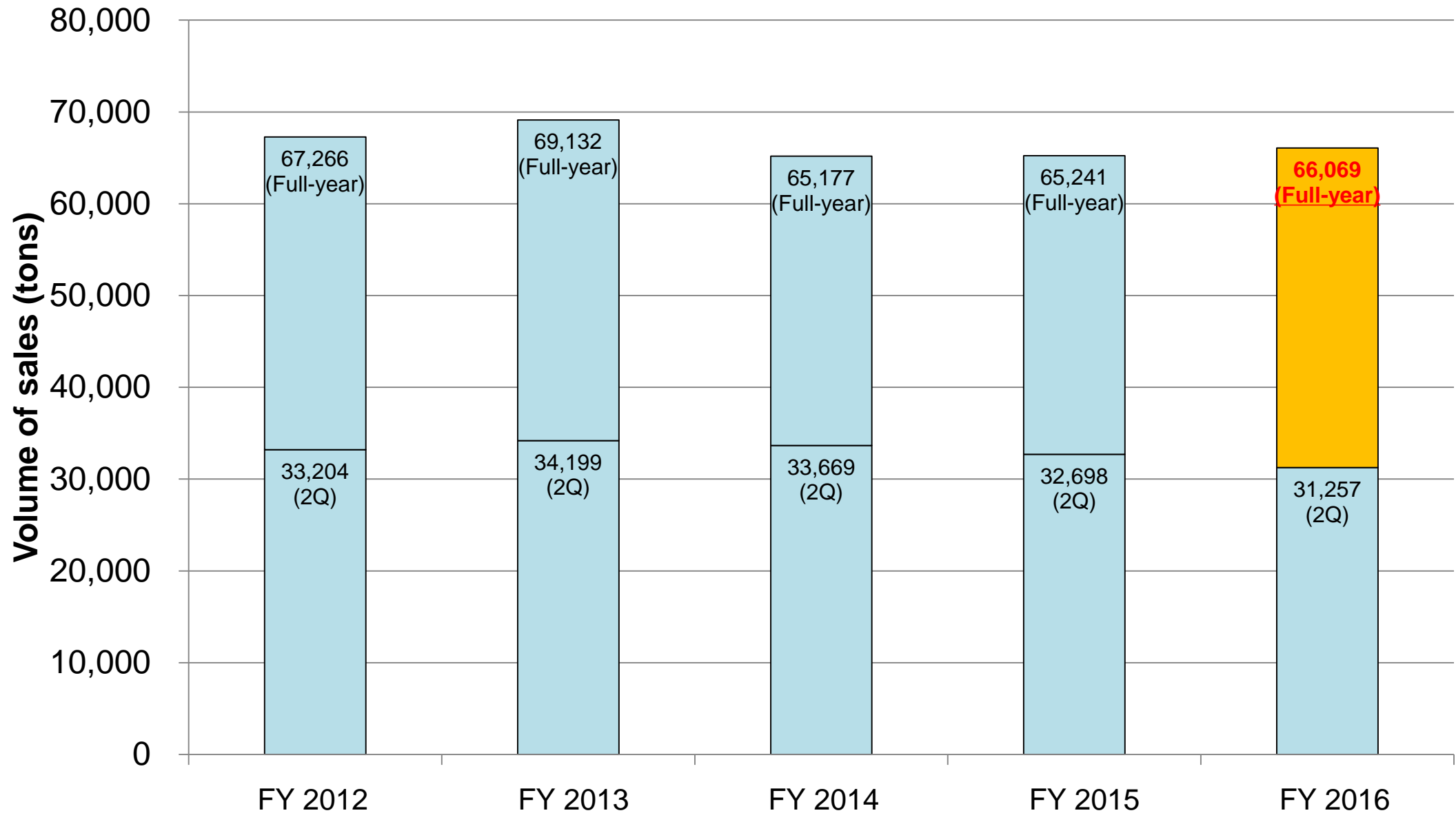
©RION CO., LTD.



High resolution ICP-MS

©Thermo Fisher Scientific K. K.

<Change of shipping volume of high-purity hydrofluoric acid (semiconductors and LCDs)>



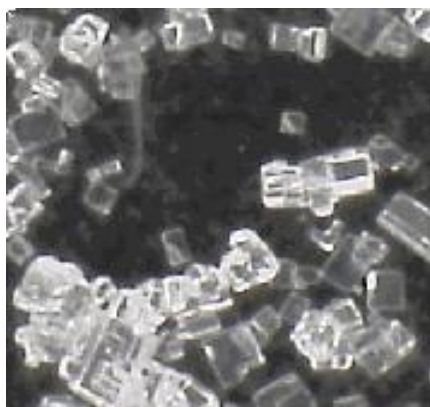
Batteries

- Features of our products
- Changes in lithium-ion battery market size and trends in electric-powered vehicles
- Changes in battery-related domestic shipping volume
- 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>

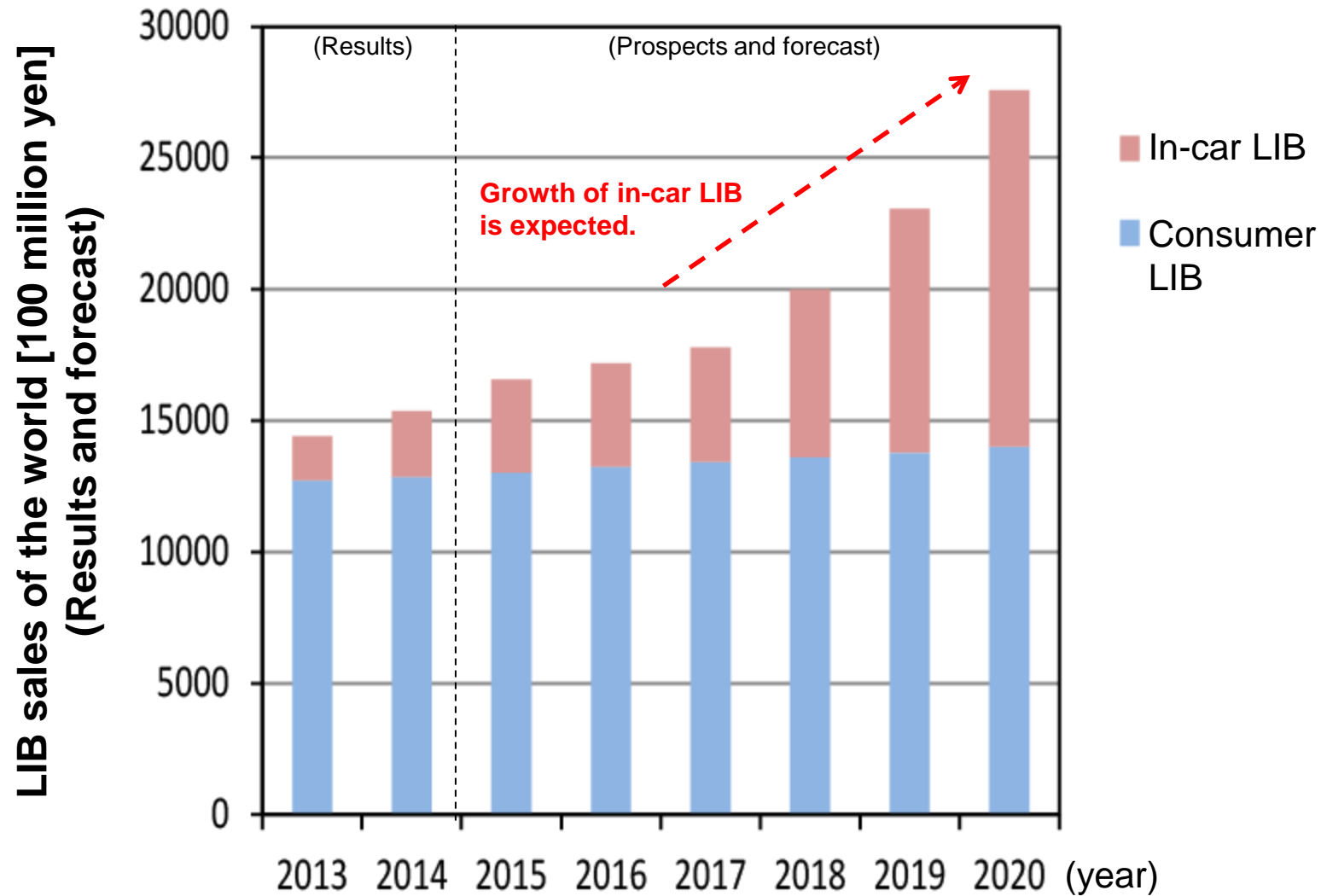


<Lithium tetrafluoroborate>



<Large-size container: 1 m³>

<Changes in lithium-ion battery market size and trends in electric-powered vehicles>

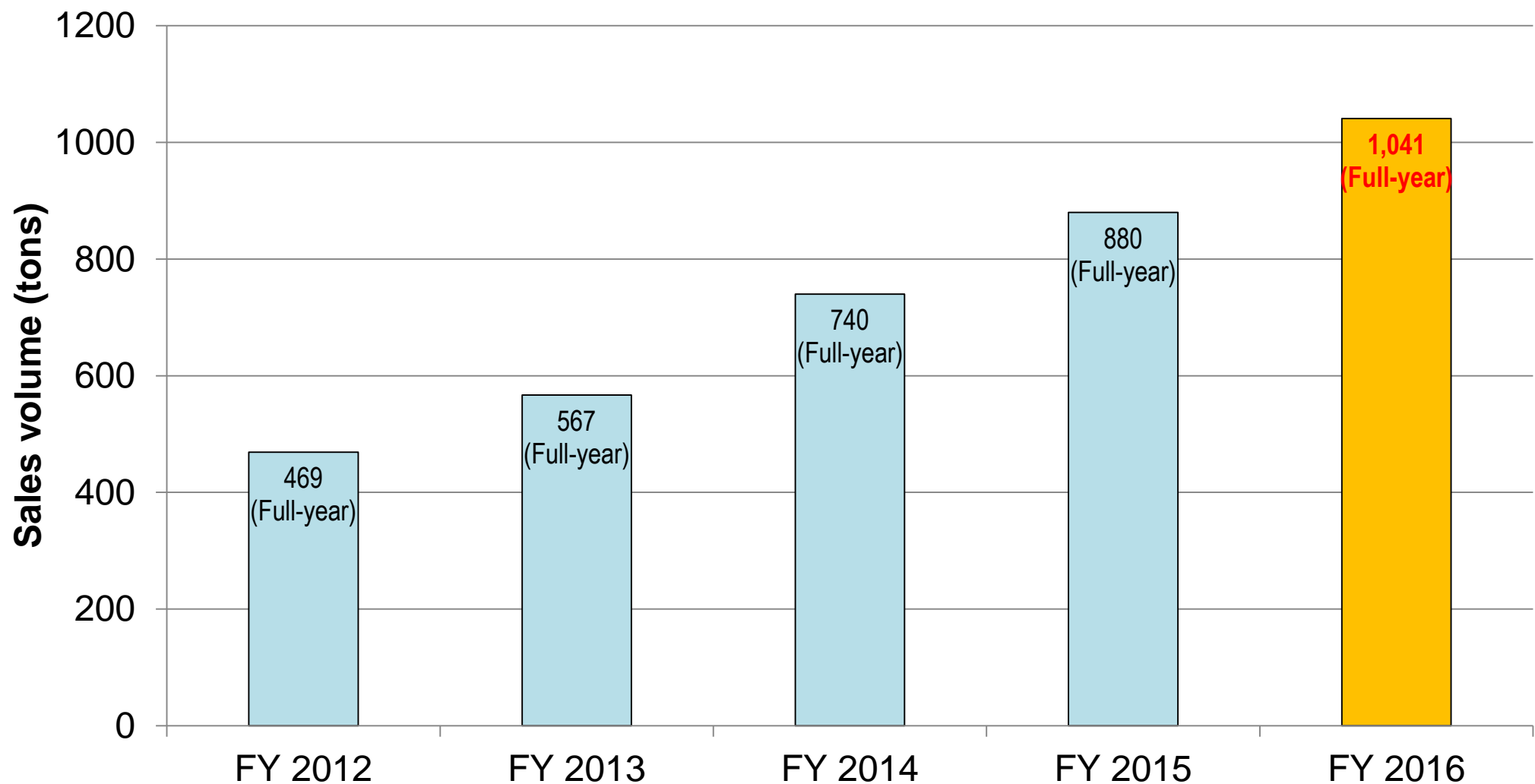


Source: Materials of Fuji Chimera Research Institute, Inc.

Market rollout of electric-powered vehicles will be accelerated in the years to come.



<Changes in battery-related domestic shipping volume>



Shipping volume of battery materials tends to increase at home.

→ **High-performance large-size batteries for automobiles began to grow.**

<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)
Location	17 Nianhua Road, Kecheng District, Quzhou City, Zhejiang Province, People's Republic of China
Business lineup	Lithium hexafluorophosphate (LiPF ₆) Research & development and production of byproduct hydrofluoric acid for industrial use, hydrochloric acid and other fluorine containing chemical system products Sales 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 business of electrolyte for lithium-ion secondary batteries in China>

■ Quzhou BDX New Chemical Materials Co., Ltd.



Product and material warehouse



Manufacturing building



Utilities building

<Plan and schedule>

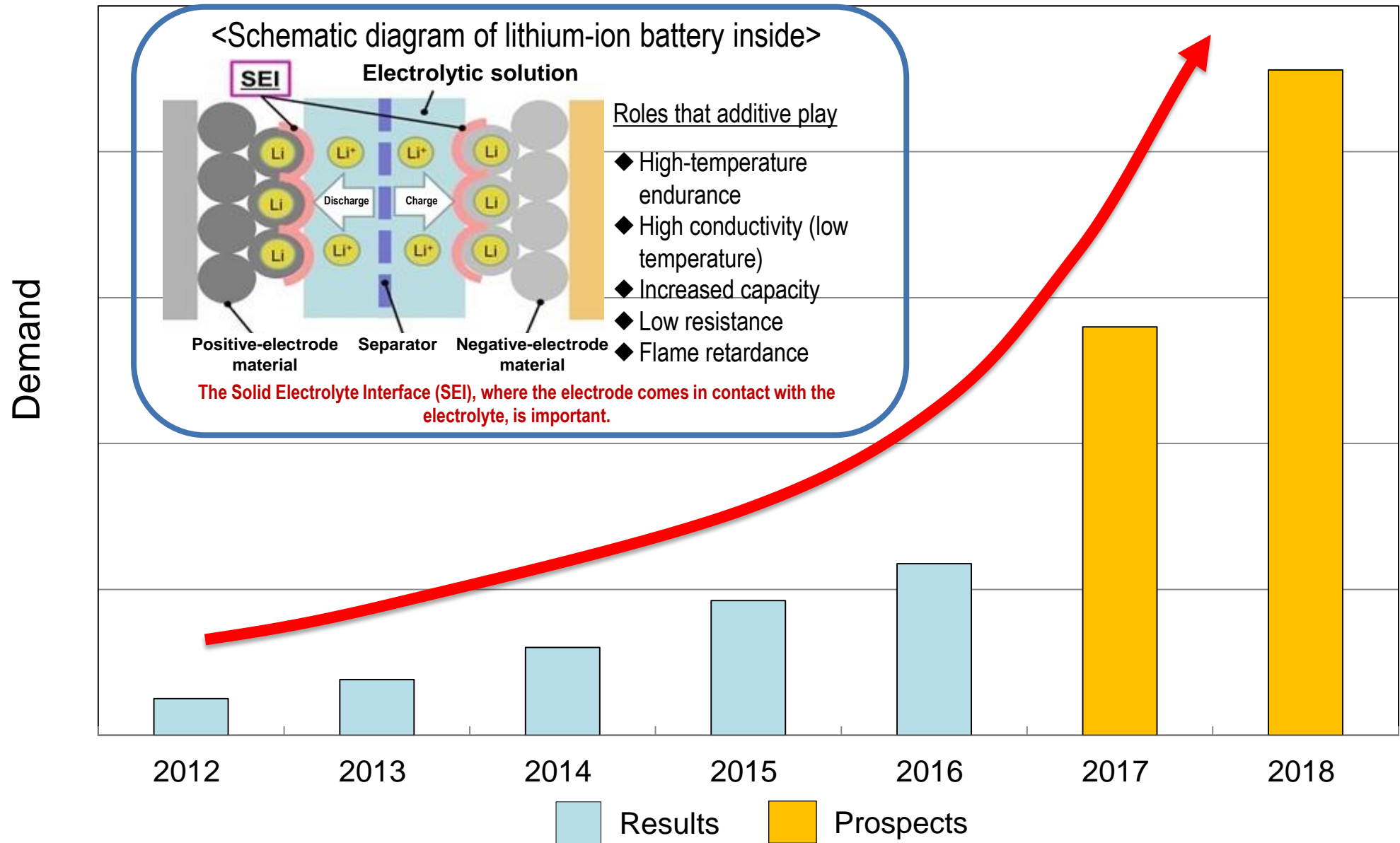
■ 2016

Completion of relocation of manufacturing facilities (Manufacturing capacity: 1,300 t/year at maximum)

■ June 2017

Start of operation of manufacturing facilities.
As soon as product evaluation (including suppliers) is completed, sales is slated to be started.

<Additives for lithium-ion batteries>



GMP-related

- GMP (Good Manufacturing Practice)

<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)>

For manufacturing
semiconductors

Expanded to products related to
daily commodities

<Examples of products for drugs>

Tin fluoride

Sodium fluoride

Sodium
monofluorophosphate

<Actions of fluorine on teeth>

- To suppress Streptococcus mutans from producing acid. (Cavity prevention)
- To promote tooth remineralization
- To form tooth resistant to acid (To form fluoroapatite)



**Sales
started.**

**Full-scale
operation
in 2016**

Boron isotope (^{10}B)

- ^{10}B enrichment technology, what is ^{10}B , and production capacity
- Characteristics of ^{10}B and applications of ^{10}B compounds

■ Establishment of enrichment technology

We established a mass production technology of ^{10}B for the first time in Japan and in November 2000, the only enrichment plant in Japan was completed.



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

■ What is enriched boron (^{10}B)?

Natural boron is comprised of an isotope of ^{10}B and ^{11}B . An existence ratio of ^{10}B is approximately 20%, and an existence ratio of ^{11}B is approximately 80%.

We can enrich an existence ratio of ^{10}B more than 95%.

■ Production capacity

Enriched boron (^{10}B): 6,000 kg/year (40 tons/year as boric acid)

■ 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 ^{10}B 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)**

Enriched ^{10}B Enriched boron



Spent nuclear fuel storage container
(Neutron shield material)

Courtesy of Kobe Steel Takasago Works

4. Medical Business

- Corporate Profile (as of March 31, 2017)
- Boron Neutron Capture Therapy (BNCT)
- World's First Accelerator-based BNCT Clinical Trial
- Boron-based Drug SPM-011 for BNCT Designated for MHLW Prioritized Review System for innovative medicines "SAKIGAKE"
- Participation in Development of Cancer Diagnosis Technology

<Corporate Profile (as of March 31, 2017)>

Company name: STELLA PHARMA CORPORATION

Address: 3-2-7 Koraibashi, Chuo-ku, Osaka-shi, Osaka

Representative: Tomoyuki Asano, Representative Director and President

Established: June 2007

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

Capital fund: 1,900 million yen

Shareholders: Stella Chemifa Corporation
Innovation Network Corporation of Japan
Sumitomo Heavy Industries, Ltd.

Laboratory: Sakai Drug Discovery Research Center
(Naka-ku, Sakai-shi, Osaka)

URL: <http://www.stella-pharma.co.jp/>

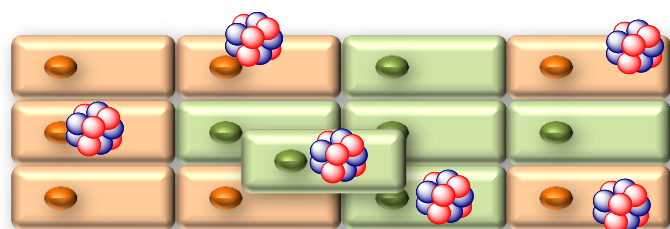


STELLA PHARMA

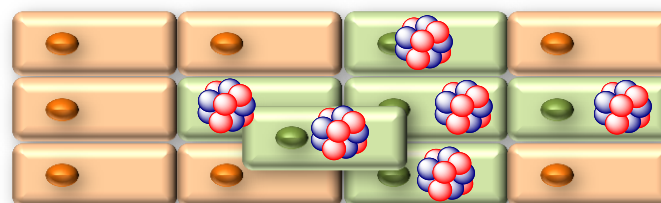
<Boron Neutron Capture Therapy (BNCT)>

Boron Neutron Capture Therapy

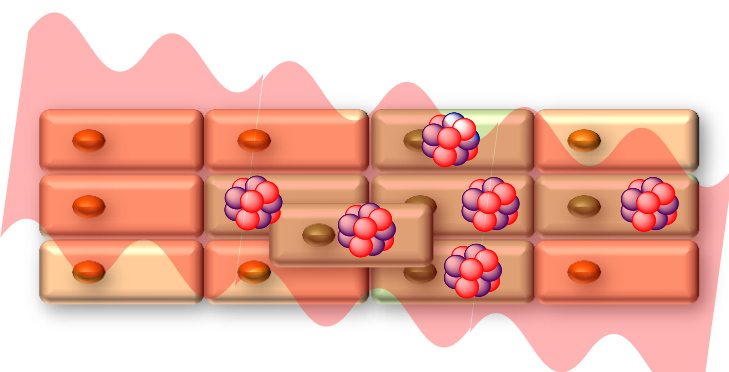
Boron Neutron Capture Therapy (BNCT) is a particle beam radiation therapy which damages cancer cells specifically by making the best of nuclear fission reactions between boron 10, stable isotope of boron, and thermal neutrons with small energy.



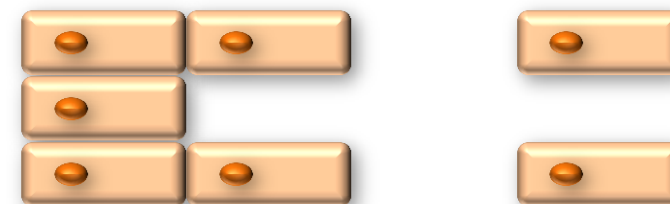
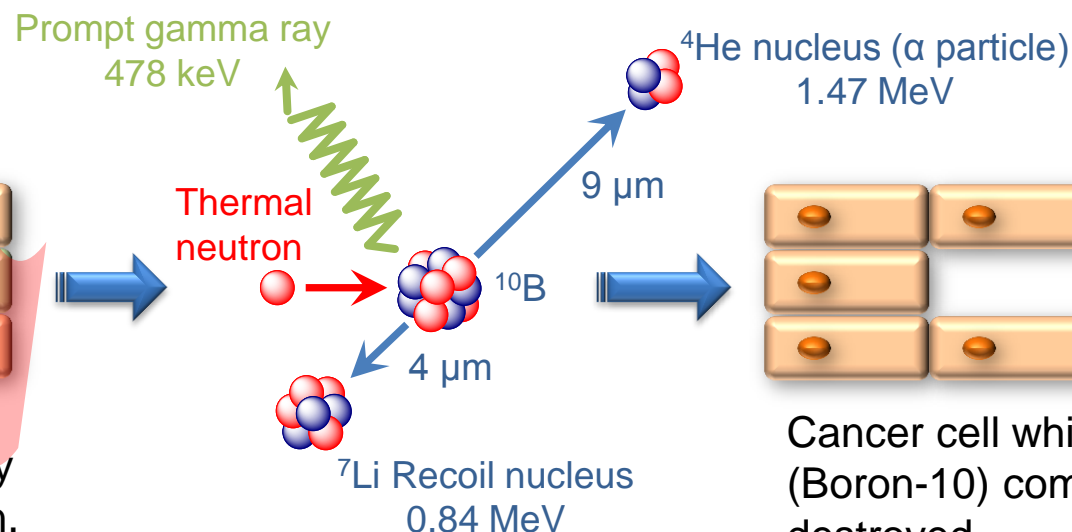
Administration of boron (Boron-10) compound



Boron (Boron-10) compound is selectively brought into cancer cells.



Irradiating with thermal neutron ray causes boron (Boron-10) to fission.



Cancer cell which brought in boron (Boron-10) compound is selectively destroyed.

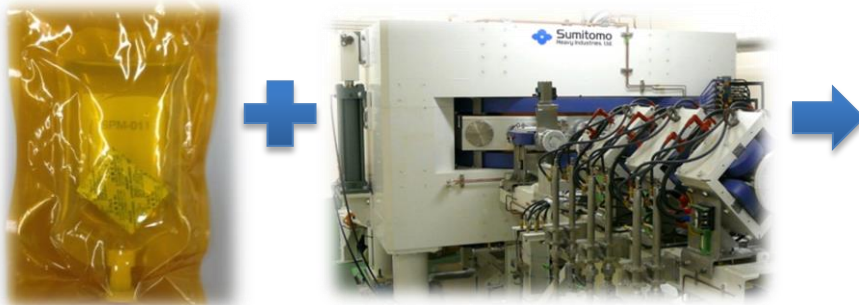
<World's First Accelerator-based BNCT Clinical Trial>

Phase II study is going on.

The world's first BNCT clinical trials using the boron-based drug for BNCT (SPM-011), which Stella Pharma developed, as well as the accelerator-based irradiation system for BNCT, developed by Sumitomo Heavy Industries, "Phase II study for recurrent malignant glioma (high-grade brain tumor)" started in December 2015 and "Phase II study for head and neck cancer" in June 2016. These trials were started after submitting the clinical trial plan notification, and are still ongoing.

Pharmaceutical
solution bag made
by Stella Pharma

Accelerator-based
irradiation system made by
Sumitomo Heavy Industries



World's first BNCT clinical trial

Recurrent malignant glioma (high-grade brain tumor)"

⇒ December 2015, Phase II study started.

Head and neck cancer

⇒ June 2016, Phase II study started.

Assumed flow chart, from clinical trial to approval application

Phase I study

Phase II study

Approval application
(scheduled)

Neutron dose is increased stepwise to check safety.

Verification of effect by the dose decided.

<Boron-based Drug SPM-011 for BNCT Designated for MHLW Prioritized Review System for innovative medicines “SAKIGAKE”>

Boron-based drug “SPM-011” for BNCT for which Stella Pharma Corporation performs clinical development was designated by Ministry of Health, Labour, and Welfare (MHLW) for “Prioritized Review System for innovative medicines ‘SAKIGAKE’” on April 21, 2017.

Drug name	Intended indications and effects	Name or trade name of applicant
SPM-011	<ul style="list-style-type: none"> • Recurrent malignant gliomas • Unresectable locally recurrent head and neck cancer and locally-advanced head and neck cancer (non-squamous cell carcinoma) 	Stella Pharma Corporation

The BNCT system (accelerator-based irradiation system) of Sumitomo Heavy Industries, Ltd. who jointly carries out the clinical study was assigned for the target item of the said system as a medical device on February 28, 2017, too.

“Prioritized Review System for innovative medicines ‘SAKIGAKE’”

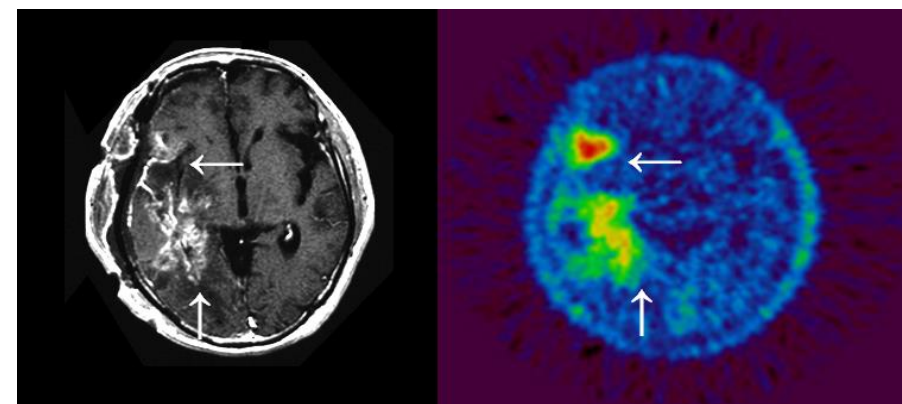
When an innovative new drug or medical device satisfies severity and other specified requirement of applicable diseases, the drug or the medical device which MHLW evaluates and assigns is given priorities in consultation and review process for its approval by using this system, and the target NDA review period can be shortened to six months, one half of that required in ordinal review.

<Participation in Development of Cancer Diagnostic Technology>

We have undertaken the development of PET diagnostic technology using [^{18}F]FBPA, which attracts researchers and industry attention as a new PET drug used for “PET diagnosis,” which is a technology useful for early detection of cancers.

Features of PET diagnosis using [^{18}F]FBPA

- ★ To be able to detect “brain tumor” which is difficult to detect at present.
- ★ Able to simply carry out PET diagnosis by [^{18}F]FBPA for institutes where PET diagnosis is conducted at present.
- ★ To be able to judge whether BNCT can be applied.



(Left) MRI image of brain tumors
(Right) [^{18}F]FBPA PET image of brain tumors

In this project, the development theme applied, jointly with Osaka Prefecture University and Osaka University entitled “Development of efficient synthesis method of revolutionary PET probe particle [^{18}F]FBPA and verification assessment of tumor specific integration capabilities” was adopted for 2016 “Project for Cancer Research and Therapeutic Evolution” of Japan Agency for Medical Research and Development (AMED) and is to be continuously implemented in FY 2017, too.

In order to provide total medical care from early cancer diagnosis to therapy, we will continue to carry out research and development starting this year.

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

5. Transportation Business

- Corporate Profile (as of March 31, 2017)
- Transportation System by Cooperation with Domestic Bases
- Overseas Bases
- International Intermodal Logistics System
- Future Activities

<Corporate Profile (as of March 31, 2017)>

Company name: BLUE EXPRESS CORPORATION

Address: 10 Ohamanishi-machi, Sakai-ku, Sakai-shi

Representative: 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

Tokyo Office
Yokohama Office
Osaka Office
Ohama Office

Kitakyushu Office
Opened in October 2014



<Overseas Bases>



China (Shanghai)

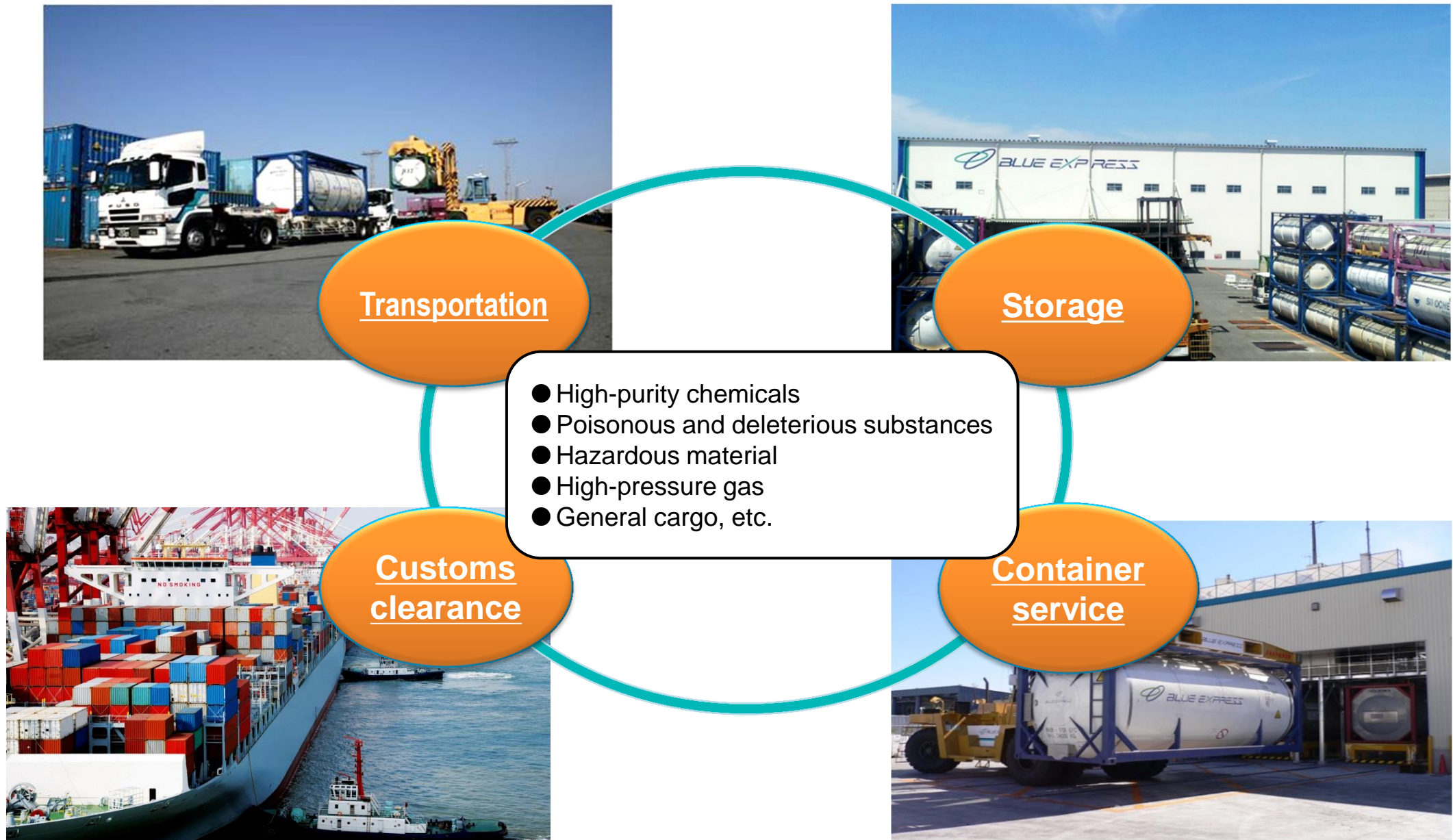
Blue Express (Shanghai) International Trade Inc.

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

Singapore

Stella Express (Singapore) Pte Ltd

<International Intermodal Logistics system>



<Future Activities>

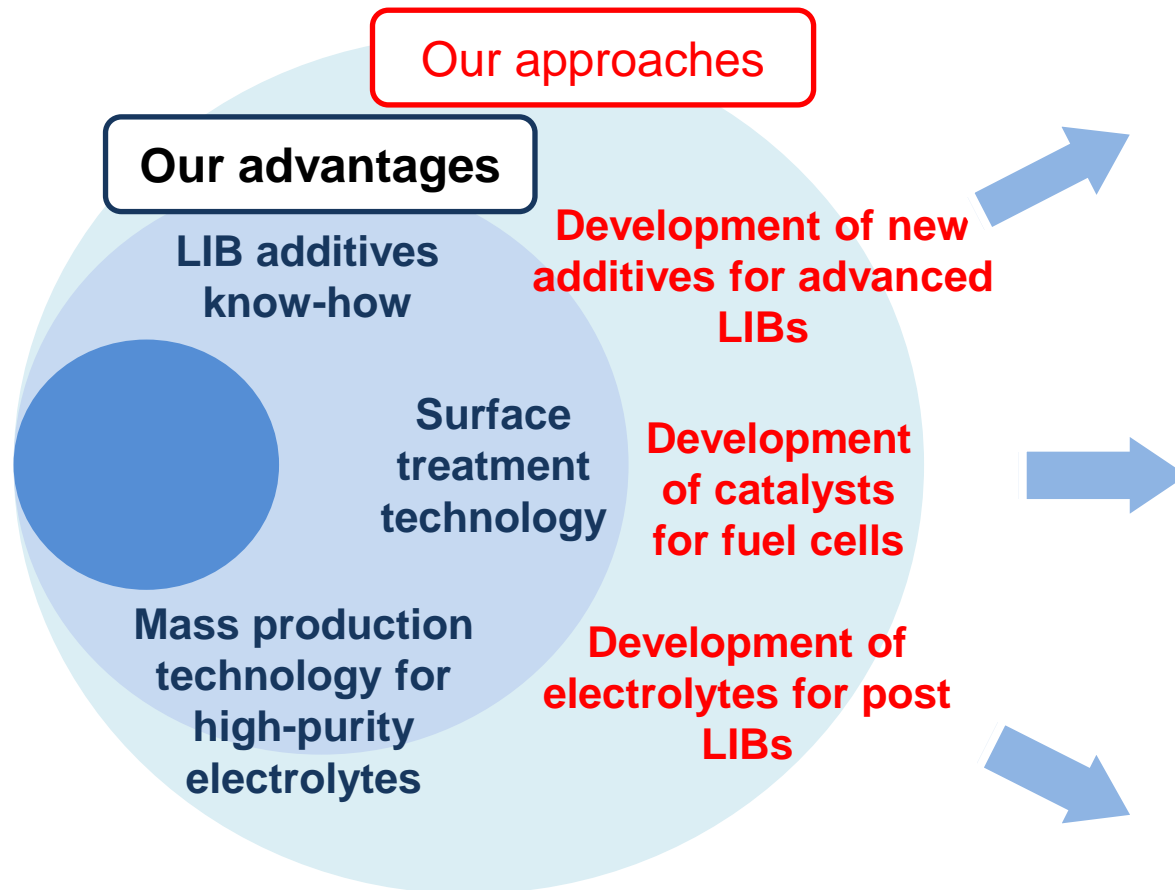
- To steadily expand business with first priority given to the improvement of customer satisfaction.
Further quality improvement, etc. of international intermodal logistics service
- To maintain continuous investment for further growth
Effective utilization of head office premises, such as the extension of hazardous substance warehouses, etc.
- To further strengthen business operation base and revenue base
Streamlining of compliance system, etc.



6. Future Activities

- Approaches to Advanced Energy Devices
- Development of Additives for Electrolytes of Lithium-ion Batteries (LIBs)
- Development of Catalysts for Polymer Electrolyte Fuel Cells (PEFCs)
- Development of Electrolyte for Post Lithium-ion Batteries
- Fluoride Nanoparticles
- Fluorinated Carbon Nanotubes (F-CNT) [1]
- Fluorinated Carbon Nanotubes (F-CNT) [2]

<Approaches to Advanced Energy Devices>



~ Roll-out to automobile and infrastructure applications ~

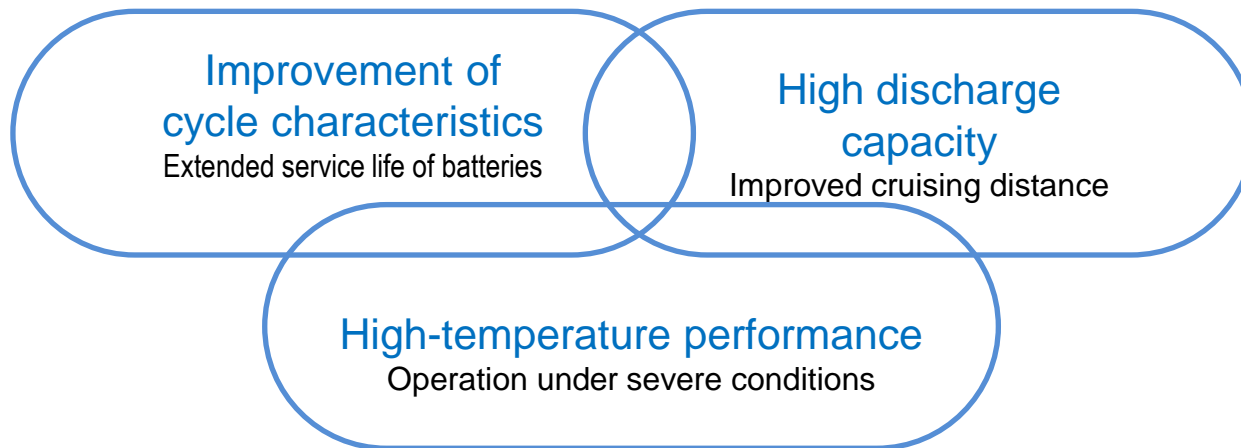


Appearance of sodium ion battery prototypes from Company C

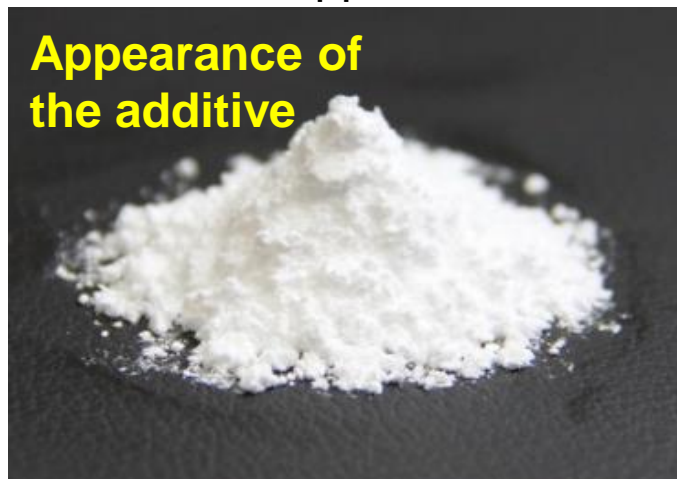
Roll-out of our core technologies to energy devices

The attainment of original products that would serve as our next-generation prime source of earnings based on our fluorine chemistry and energy-related technologies

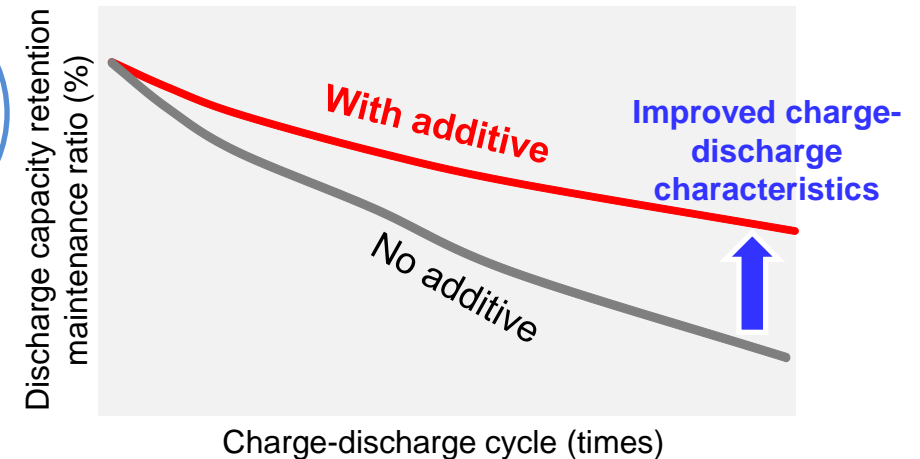
<Development of Additives for Electrolytes of Lithium-ion Batteries (LIBs)>



Battery performance requested for in-car applications



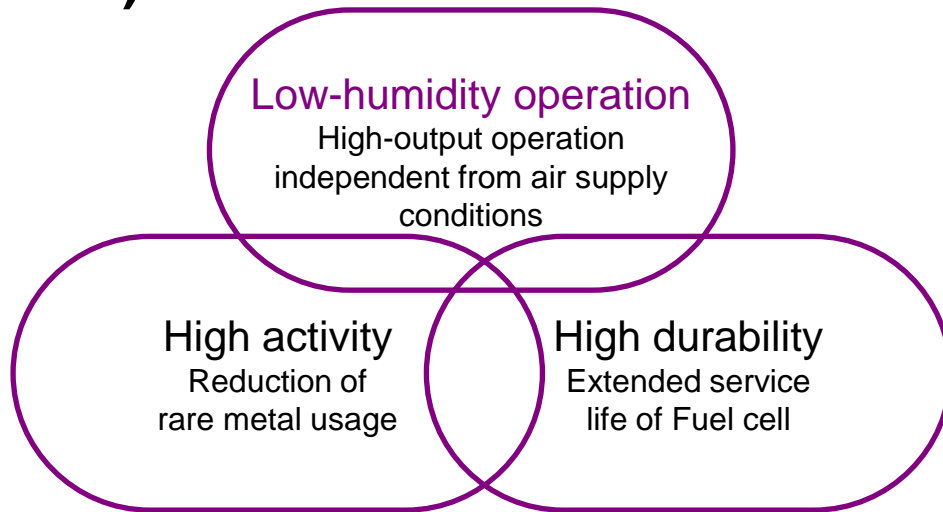
*Posted on Nikkei Sangyo Shimbun
(posted on July 28, 2016)



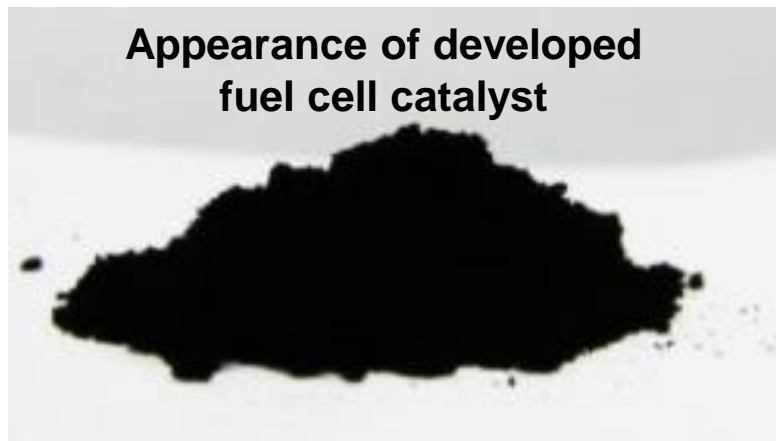
Effect of improved charge-discharge cycle characteristics by new additives

Early achievement of customers' adoption and development of mass-production technology

<Development of Catalysts for Polymer Electrolyte Fuel Cells (PEFCs)>

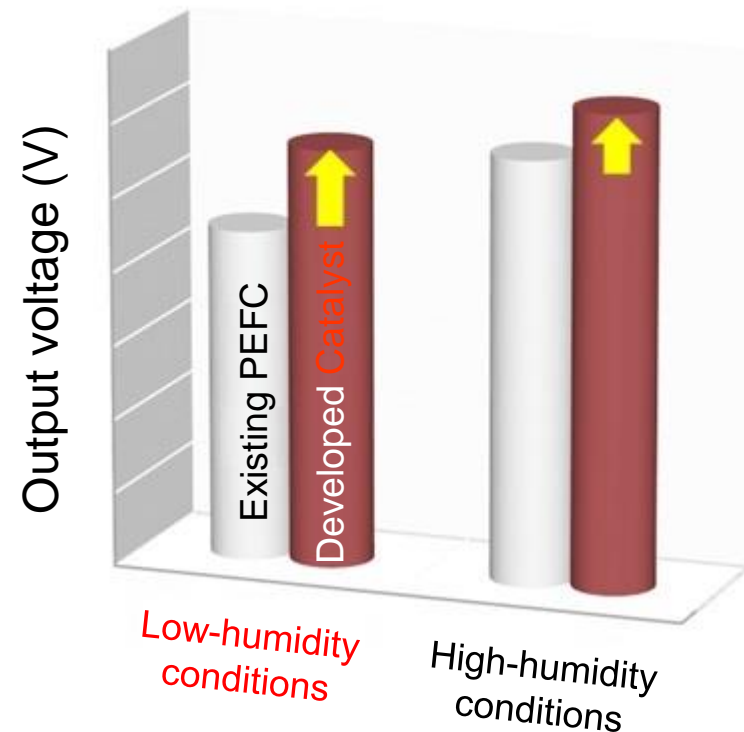


Performance required for fuel cell catalyst



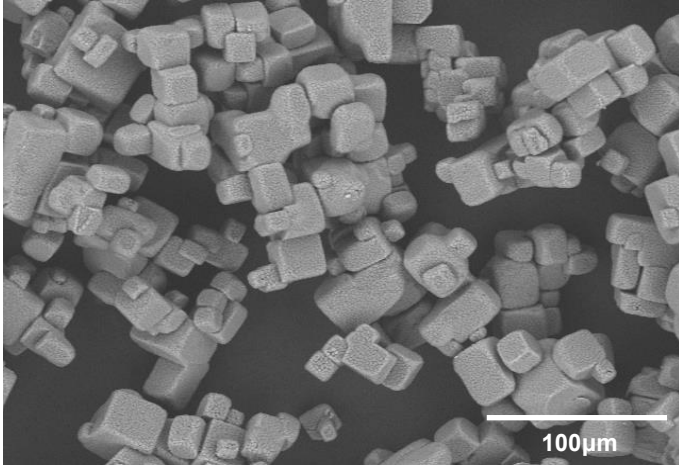
**A system that enables in-house assessment of fuel cells is established.
The further improvement of the performance is under consideration toward sample work.**

Remarkable output improvement confirmed under the conditions (low humidity) which is a problem for the operation of PEFC



Evaluation results of developed catalyst activities

<Development of Electrolyte for Post Lithium-ion Batteries>



**World's highest quality level
electrolyte for sodium-ion batteries**

**Succeeded in development of high-
quality and low-cost process**



**Under sample work primarily to LIBs'
electrolytes users**

Imminent practical use

**A prototype bicycle with a sodium-ion
battery mounted is created.**



*Image illustration

<Fluoride Nanoparticles>

Development of low refractive index fluoride material for antireflection film

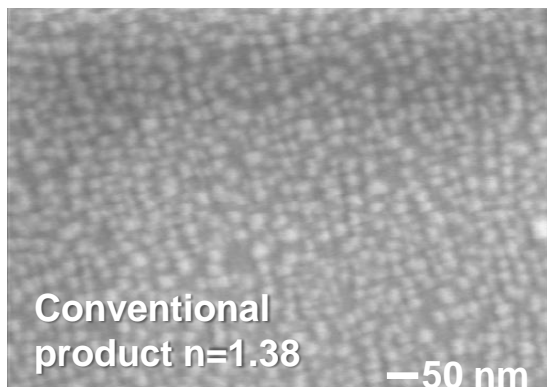


*Image illustration

Evolution and market expansion of smart cars, IoT, and wearable devices



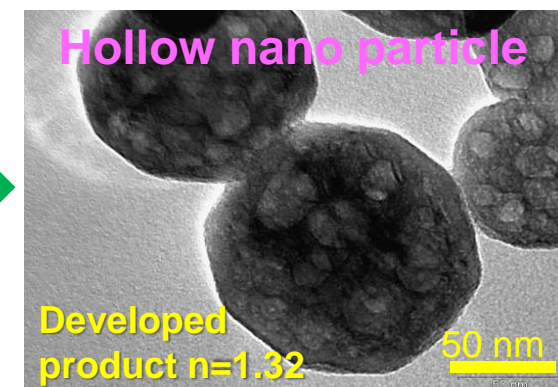
Increased demand of coating material that increases display panel visibility



Hollow introduced in particles by particle morphology control



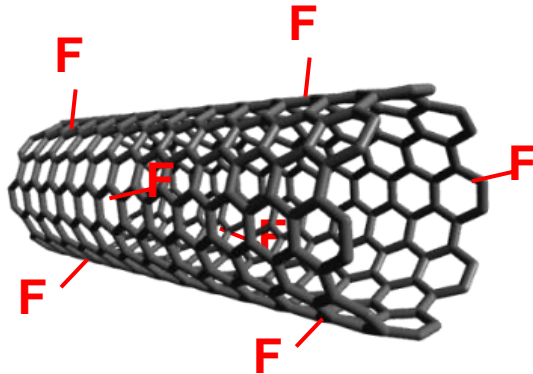
Achievement of low refractive index



<Fluorinated Carbon Nanotubes (F-CNT) [1]>

With improvements in mass-production technology of carbon nanotubes (CNT), practical application has occurred.

CNT is the development field where the market size smoothly progresses and further development of applications is awaited.



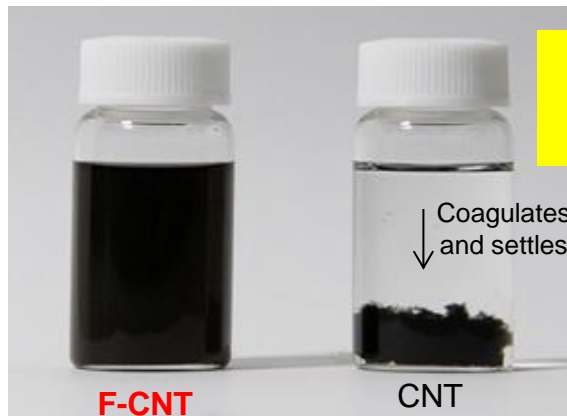
Schematic diagram of fluorinated CNT

Our Company core technology
Surface treatment technology by fluorine gas



Fluorinated carbon nanotube (F-CNT)

Fluorinated carbon nanotube (F-CNT) dispersed liquid



(No fluorine treatment)

F-CNT does not coagulate
but disperses uniformly.

For alcohol and other organic solvents,
F-CNT dispersed liquid with high dispersibility
without using any surfactant.



PR to customers started.

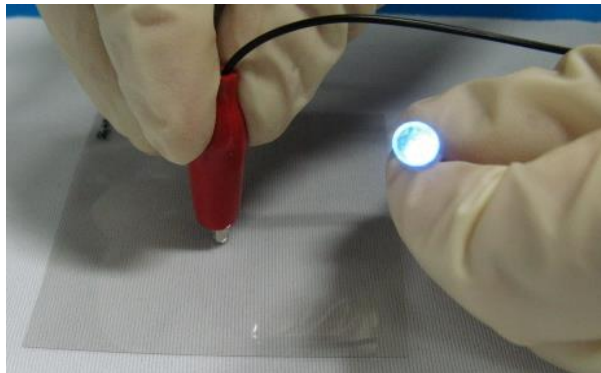
(Film and resin material manufacturers, etc.)

Appearance of fluorinated CNT dispersed liquid

<Fluorinated Carbon Nanotubes (F-CNT) [2]>

Example of developed applications

Coating-type transparent conducting film and antistatic film



Example of prototype
conductive film by F-CNT

- Able to be fabricated using general coating methods (bar coat, spray coating, etc.)
- Able to achieve required specifications for touchscreen applications
Total light transmittance: 85% or more
Sheet resistance: 500 Ω/\square or less

➡ **Roll-out to the display field
(touchscreen, etc.)**

Composite material (compounding of CNT and resin)

- As a filler of CNT-containing resin composite material, strength has been increased by 25% as compared to simple resin.

➡ **Roll-out to the engineering
plastic field**

7. Medium-term Management Plan

(FYE 3/2017 to FYE 3/2019)

Notice on modification of numerical targets

- Financial Highlights of FYE 3/2017
- Modification of Numerical Targets

<Financial Highlights of FYE 3/2017>

The business results of the FYE 3/2017 reveal that profit greatly exceeded the initial plan.

- With the improvement of market conditions of the battery department, profitability was improved.
- The main raw material, anhydrous hydrofluoric acid, subsequently remained at lower levels than initially assumed.

(Plan/Results)

(million yen)

	FYE 3/2017 (Plan)	FYE 3/2017 (Results)
Sales revenue (consolidated)	28,249	29,850
Operating profit (consolidated)	1,374	4,372

<Modification of Numerical Targets>

The operating profit and operating profit margin of FYE March/2017 achieved the target of the final year in the first year, and the numerical targets of medium-term management plan were modified with this achievement taken into account.

For FYE March/2018, the immediate price rise of anhydrous hydrofluoric acid is reflected and declining profit is anticipated, but in FYE March/2019, it is predicted that the material price rise will slow down and at the same time, the sales of the additive for lithium-ion secondary batteries will increase. The target operating profit is anticipated to be restored to the profit level of FYE March/2017.

(Before modification) (million yen)

	FYE 3/2018	FYE 3/2019
Sales revenue (consolidated)	28,718	29,699
Operating profit (consolidated)	1,536	1,922



(After modification) (million yen)

	FYE 3/2018	FYE 3/2019
Sales revenue (consolidated)	30,472	32,200
Operating profit (consolidated)	3,350	4,400

<Modification of Numerical Targets>

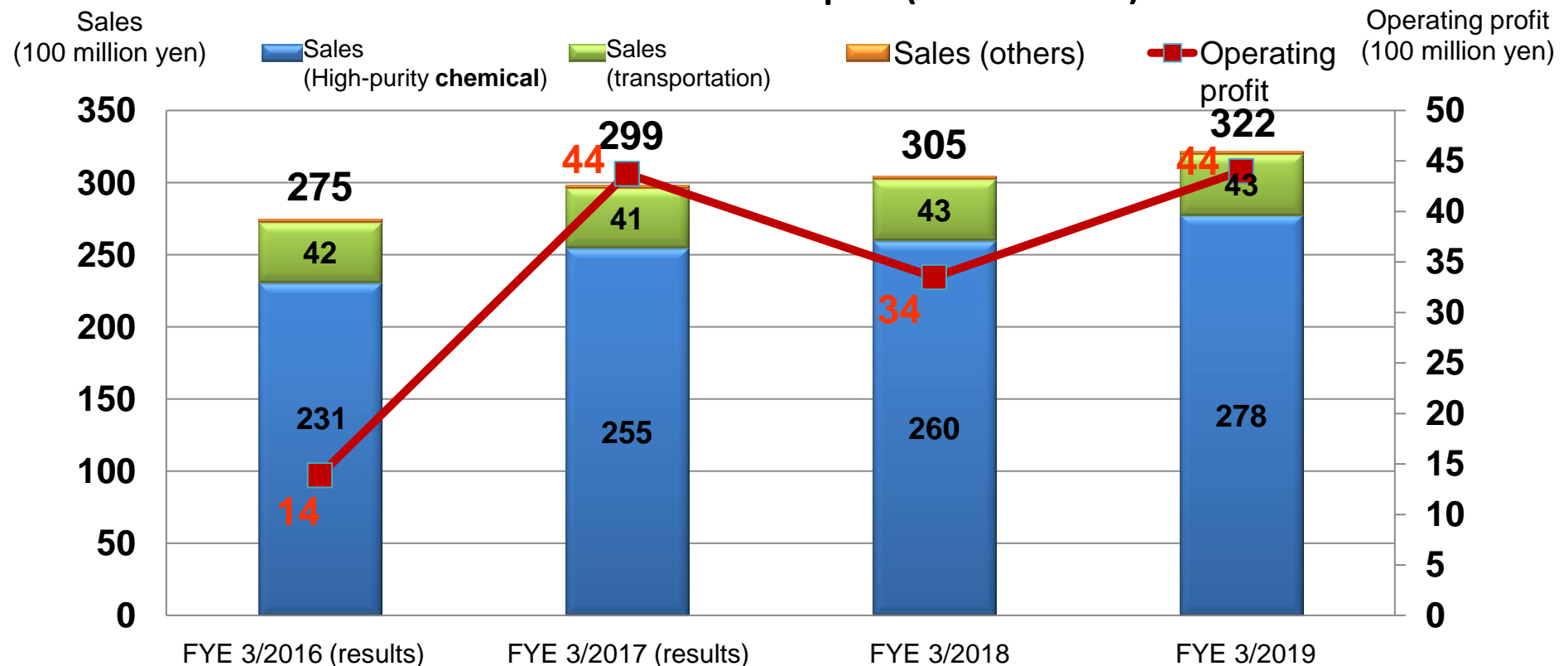
In the period of present medium-term management plan (FYE 3/2017 to FYE 3/2019), “profit” is secured and increased by:

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

We will make

◆ investment on research and development for starting up the medical business, and aim at achieving the consolidated operating profit of 4.4 billion yen (operating margin of 13.7%) for the FYE 3/2019.

Medium-term numerical plan (consolidated)



Corporate slogan

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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