

March 30, 2005

Toray Group Film and Resin Businesses in the IT-related Products Segment

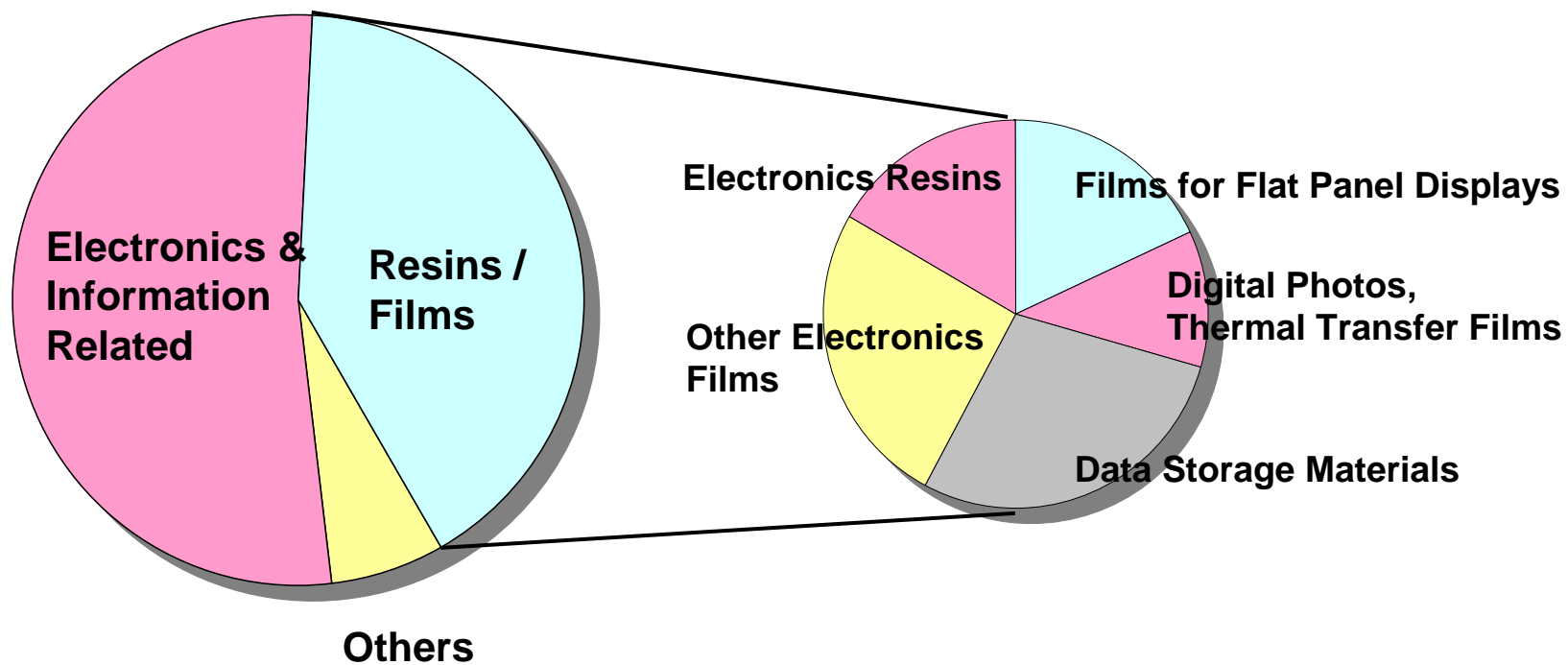
Junichi Fujikawa
Senior Managing Director

Toray Industries, Inc.

Sales Proportion of Film & Resin Businesses in the IT-related Products Segment

Film and Resin Businesses account for nearly 50% of sales of IT-related Products Segment, and many of the Film and Resin products are highly appreciated in the IT-related businesses.

IT-related Products Segment Net Sales : 215.0 billion yen



Development of Films Related Products in the IT-related Areas

Fundamental Technologies

Pursuit of Ultimate Performance

To IT-related Areas

Polymer Technologies

New Polymers

Polymer Design

Film Production
Technology

Solution Film
Production

Fusion Film
Production

Molecular Structural
Design / Control

Surface Design /
Control

High Heat Resistance

Polyimide film
"Kapton"

High Rigidity

Biaxially oriented
aramid film *Mictron**

High Dimensional
Stability

Biaxially oriented
PPS film *Torelina** film

Smoothness /
Lubricity

Biaxially oriented PET film
*Lumirror** (High strength/high-
definition surface)

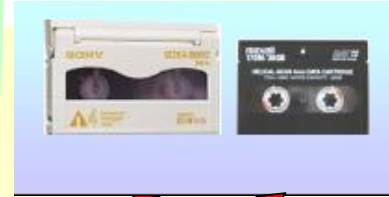
Super Transparency

Biaxially oriented PET film
*Lumirror** (Super transparent)

Highly-reflective

Biaxially oriented PET film
*Lumirror** (Super white)

Super-white, high-reflection *Lumirror**



Information
Storage

Compact high-capacity film *Mictron**



Information
Processing

*Torelina** used in chip-type film capacitor



Information Display

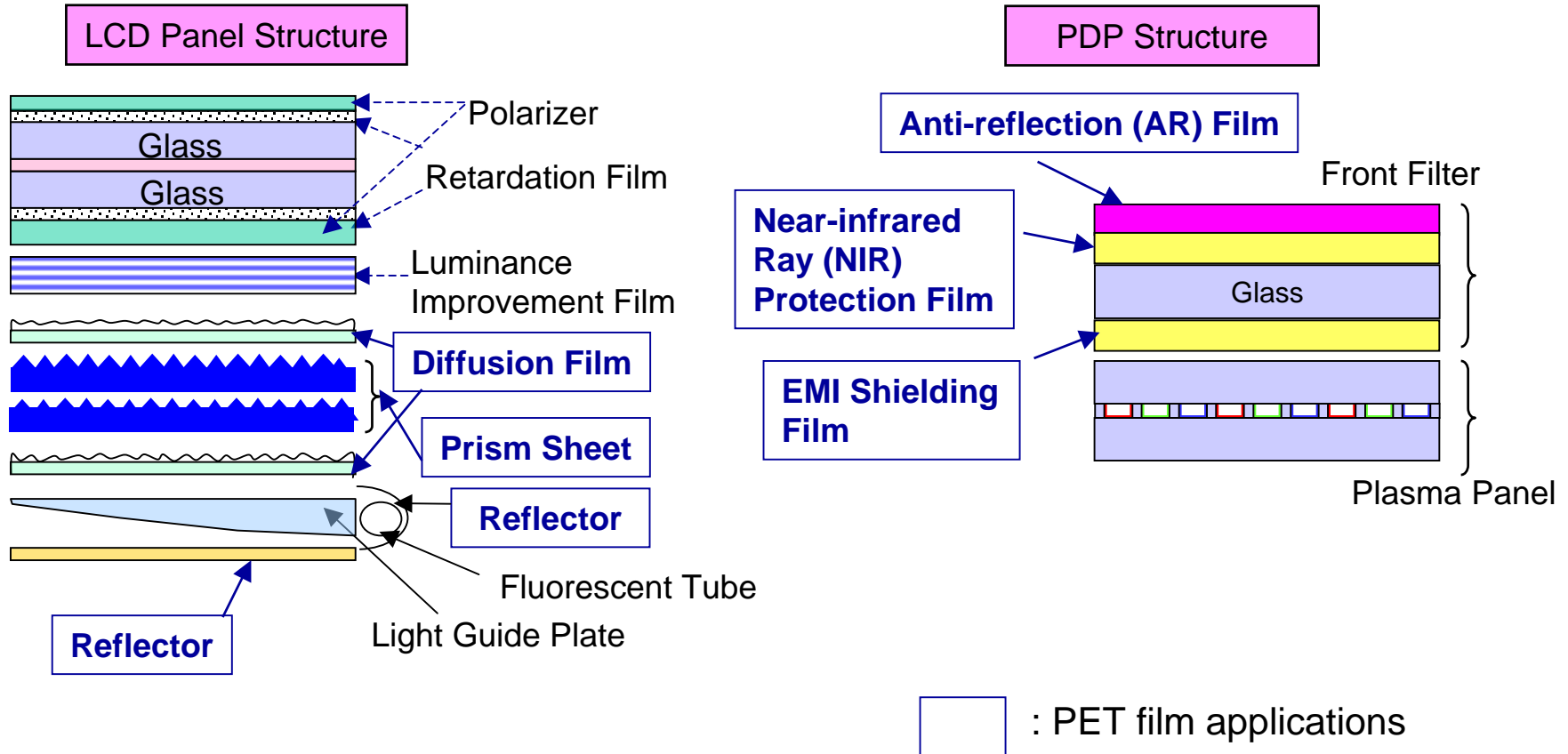
Optical functional film
groups formed
from super-transparent
*Lumirror**

Focus on Optical
Functional Films

The products with an asterisk (*) or in quotes are registered trademarks of the Toray Group.

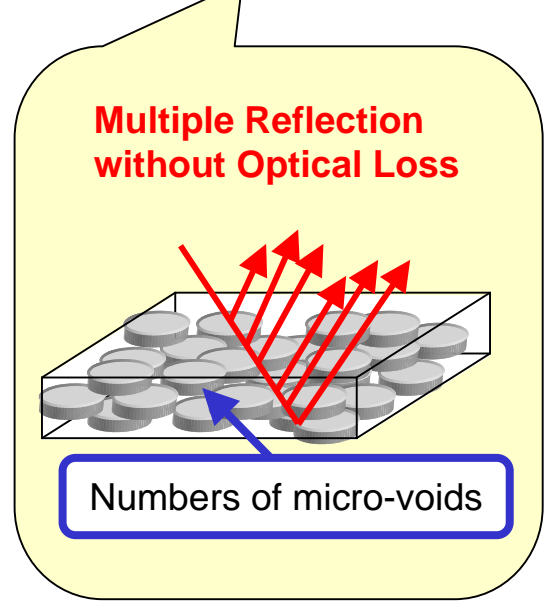
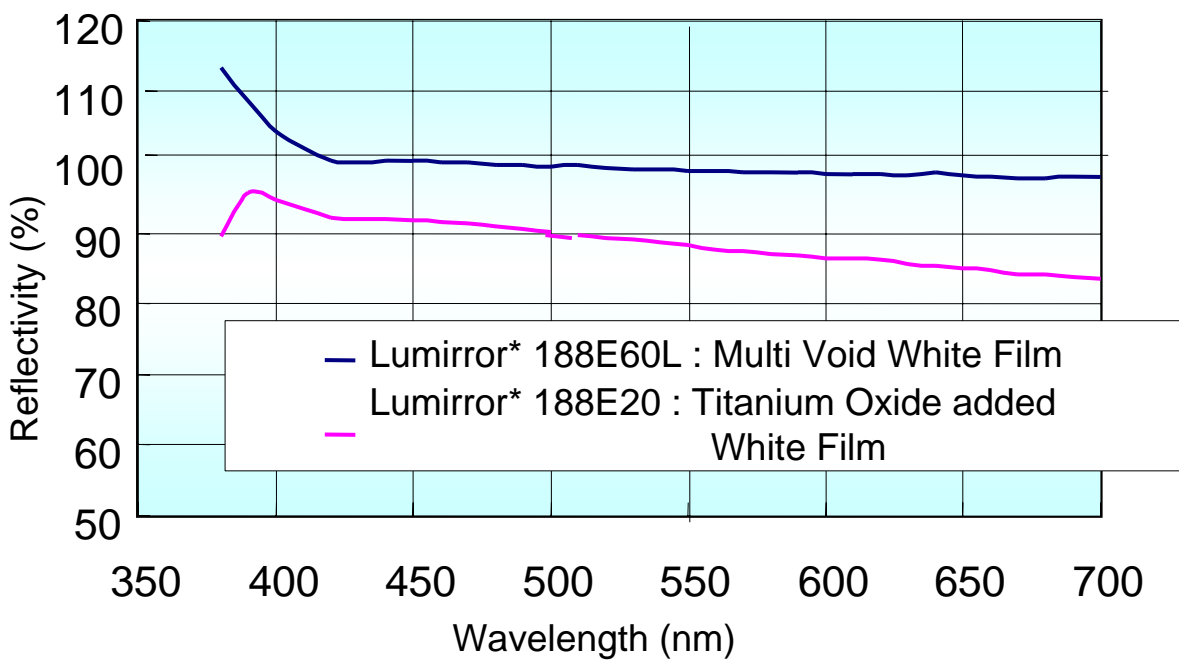
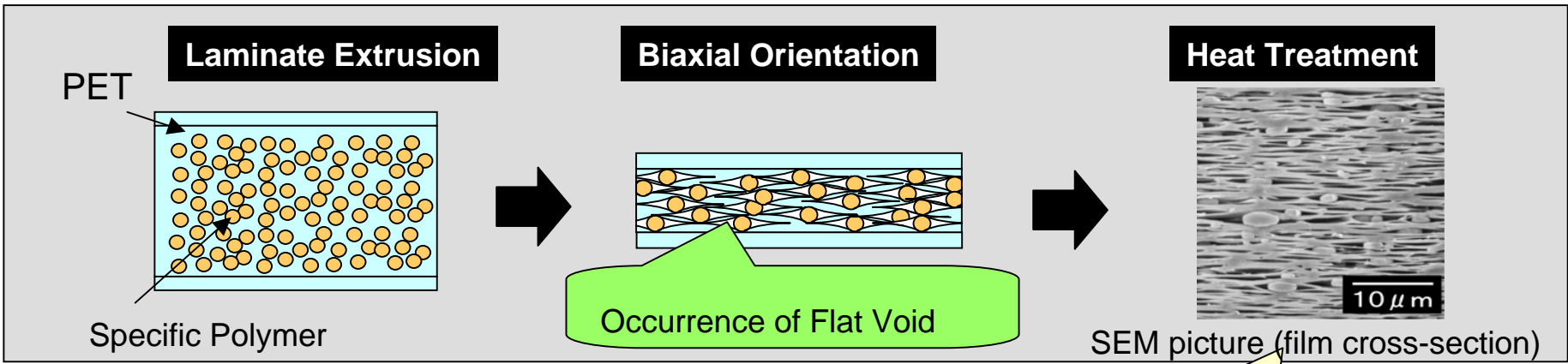
Optical Films for FPD

Toray PET film Lumirror* is used in many components of the expanding LCD and PDP. We will boost synergy with film processing business and further expand / strengthen film businesses for LCD.



Major Technologies for Optical Films (1) : Light Reflection

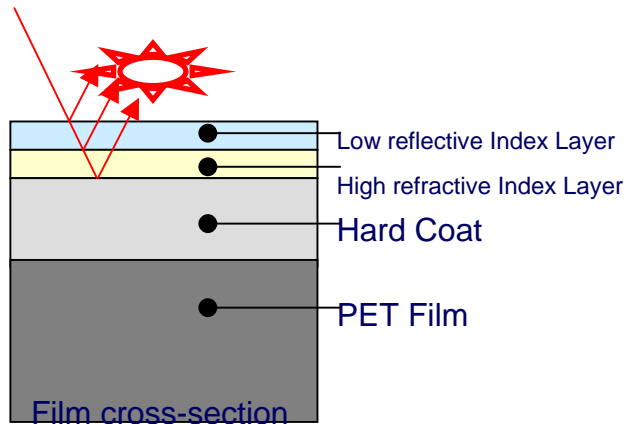
Market de facto standard, Lumirror* E60L , light reflection film.



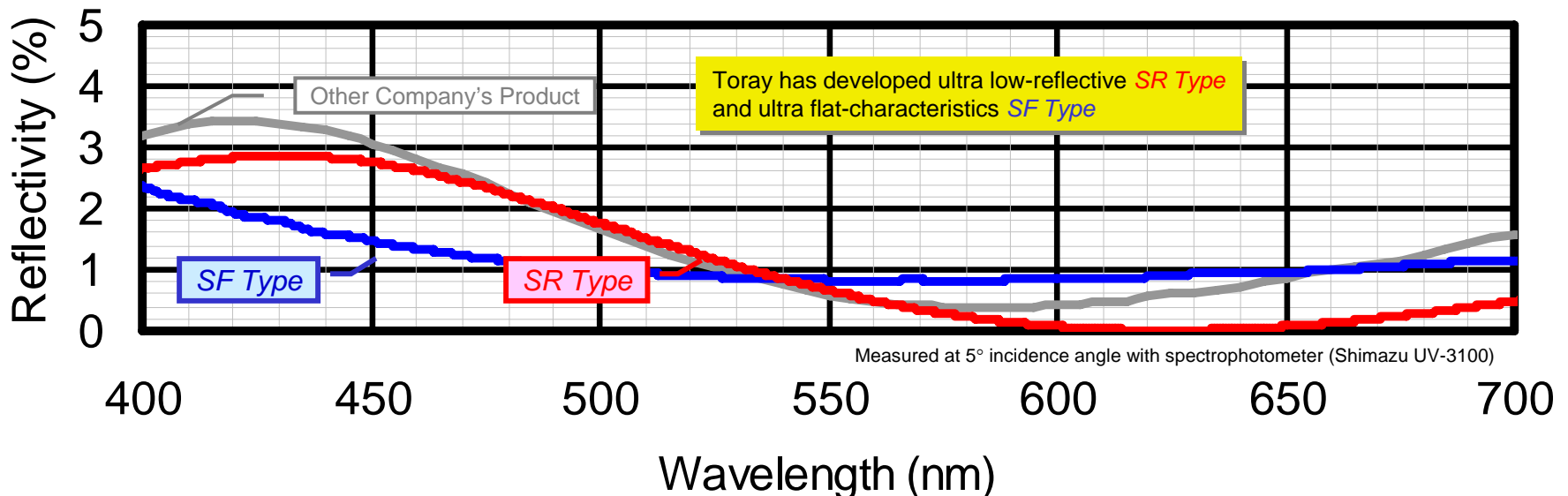
Major Technologies for Optical Films (2) : Anti-reflection

High-performance, Unique Anti-reflective PET film, Lumiclear*

Anti-reflection Principle : Block out reflection by Optical Interference

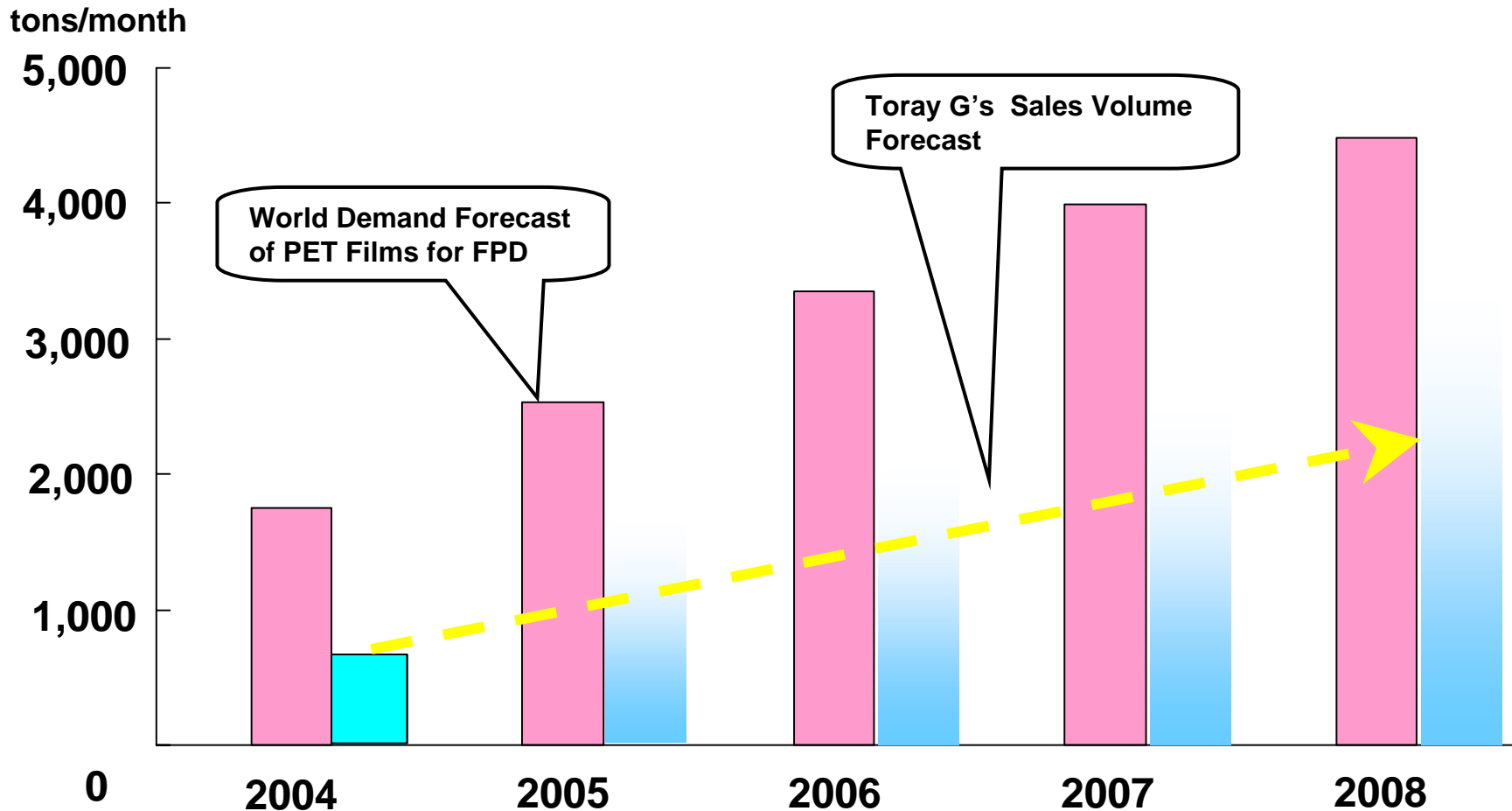


Newly Developed and Unique Coating Material
 ×
 Ultra-accurate / Precise Wet Coating Technology
 ×
 Film Processing Technology of High-grade PET Film
 ||
**High-performance / High-grade / Low cost
 AR Film**



World Demand and Toray Group's Sales Volume of Optical PET Films For FPD

The demand for optical PET film is expected to increase by annual 25% due to drastic growth of LCD / PDP for personal computers and large-size TV applications. We will strive for business expansion and gain more market share of PET films including processed film products.

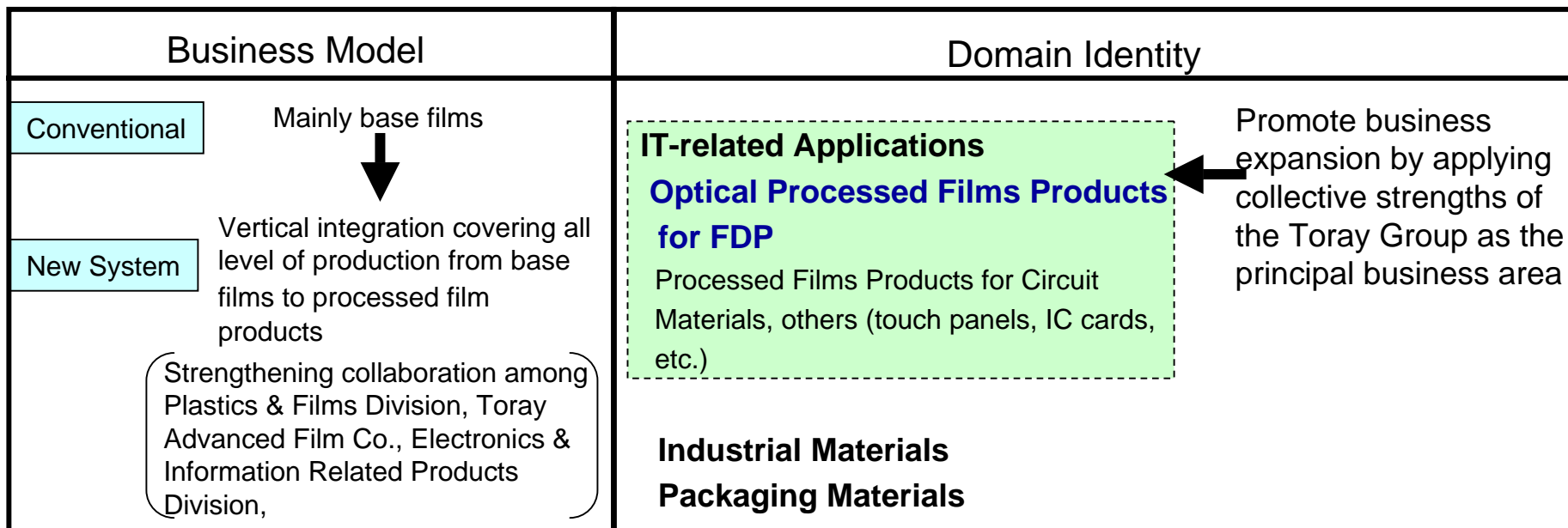


Expansion of IT-related Products by Strengthening Film Processing Businesses

Toray will develop an integrated manufacturing / development / sales system from base film to high-functional processed film products. While closely collaborating with customers, Toray plans to expand business by providing real solutions to customer needs.



Toray merged Toyo Metallizing Co., Ltd. and Toray Plastics Films Co., Ltd. To establish **Toray Advanced Film Co., Ltd.** in July 2004.

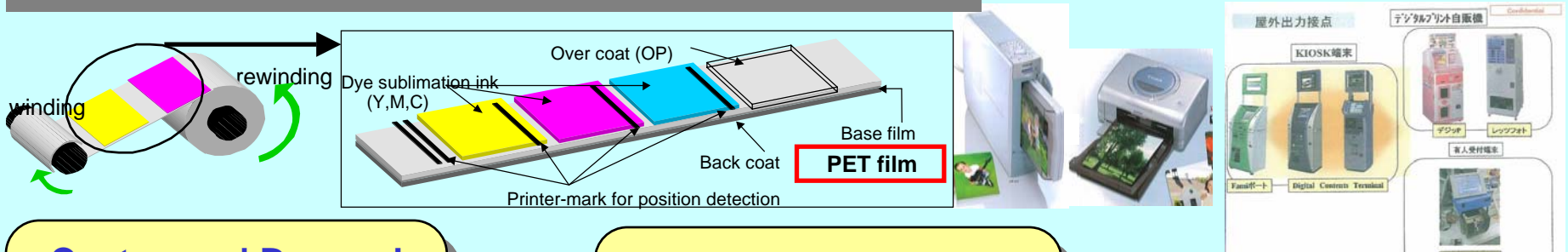


Sales of Toray Advanced Film Co. : Mar/05 approx. 33 billion ¥ → Mar/10 image approx. 100 billion ¥

Business Development in the Digital Photo Printing

In the digital photo printing, Toray is developing film businesses for ribbons and graphic art base of dye sublimation color printers.

PET Films for Dye Sublimation Color Printer Ribbons



Customers' Demand Characteristics
smoothness / brilliancy / high strength

Toray's Strength
ultra-thin layer formation technology / surface treatment technology

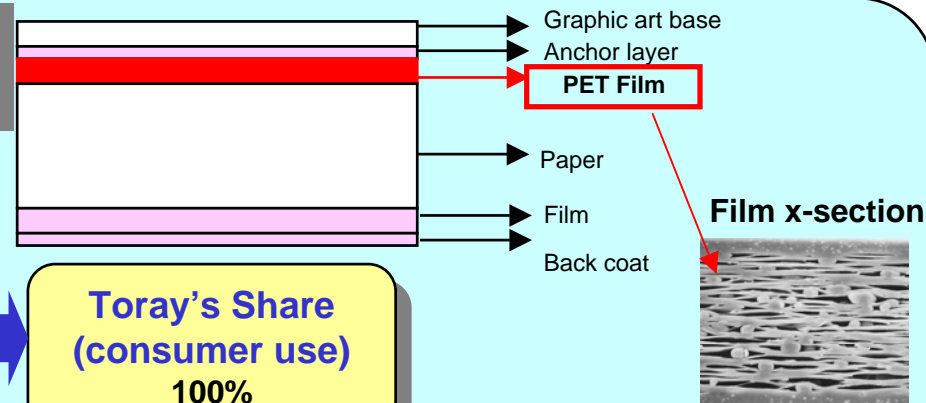
Toray's Share
over 90%

PET Films for Graphic Art Base of Dye Sublimation Color Printers

Customers' Demand Characteristics
Whiteness / brilliancy / cushion characteristics

Toray's Strength
Whitening technology / composite technology

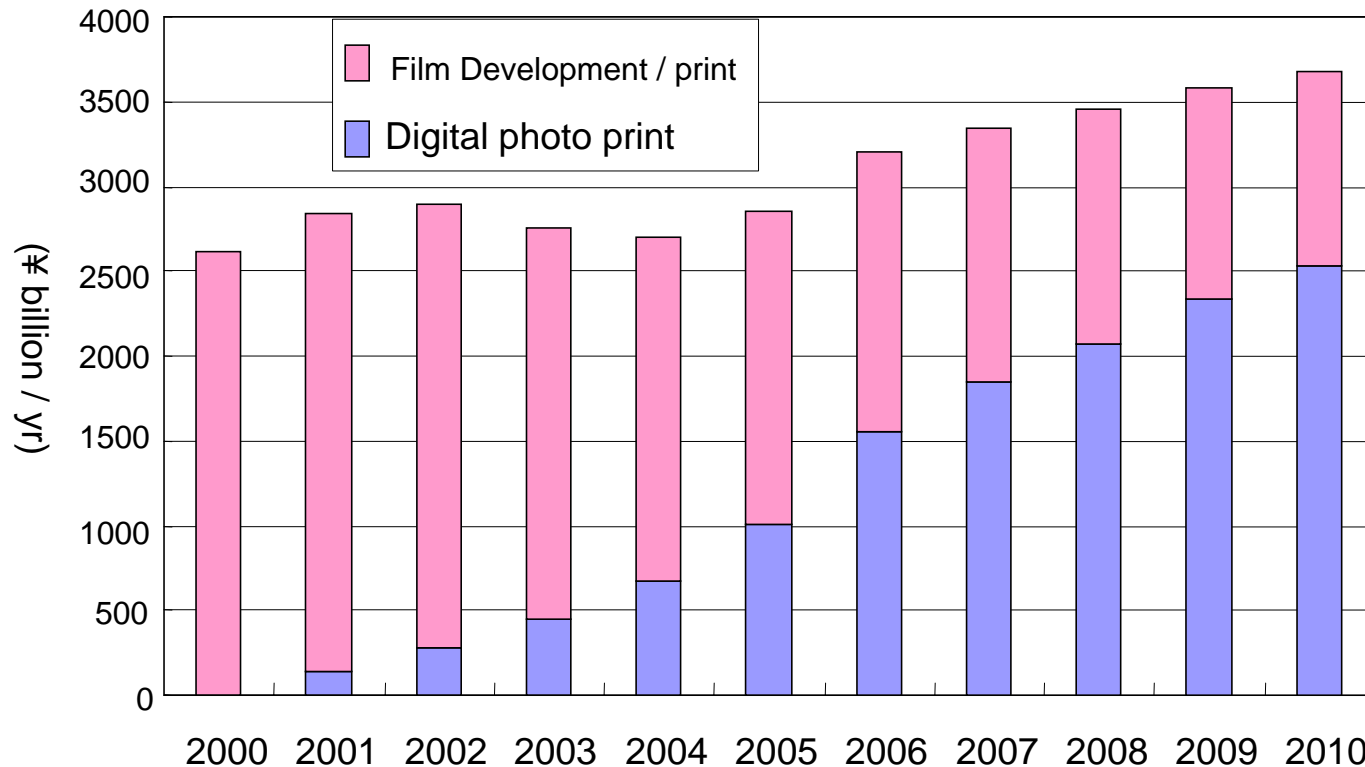
Toray's Share (consumer use)
100%



World Demand for Digital Photo Printing

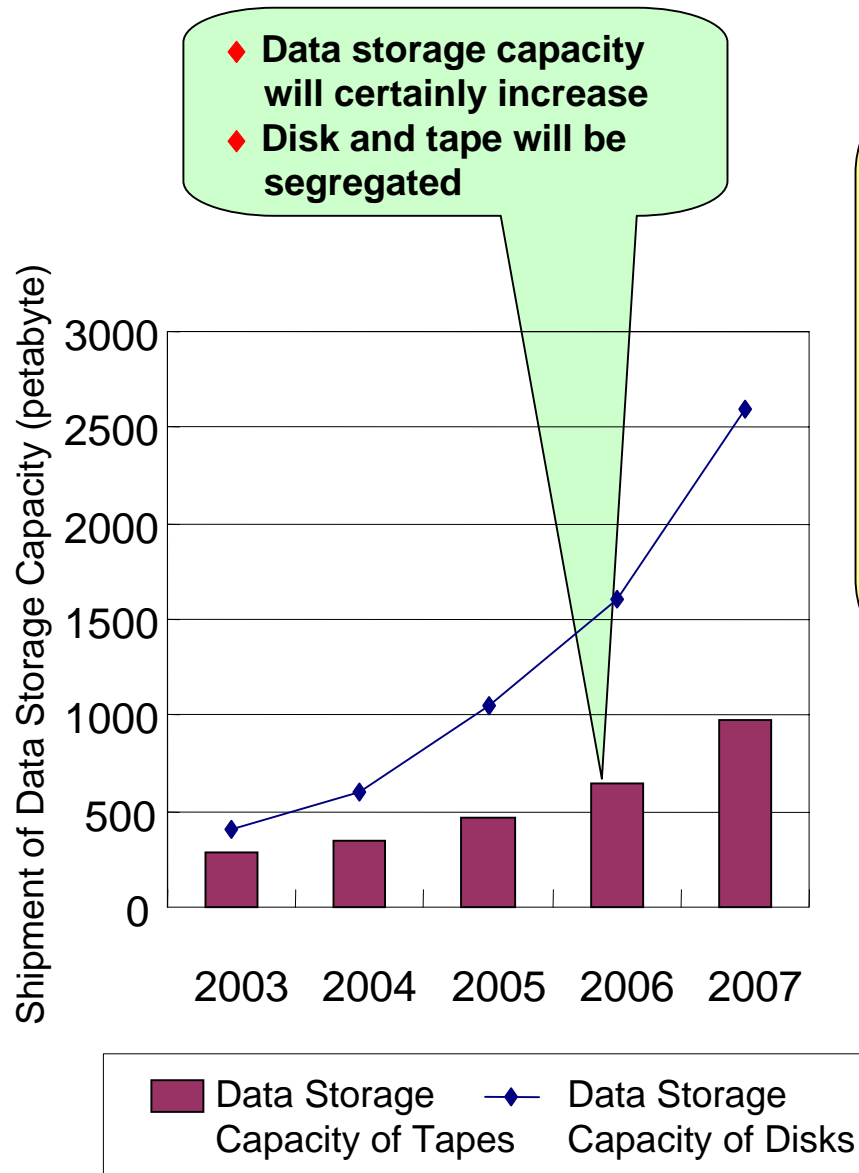
The digital photo printing is expected to expand drastically as a printing method for digital cameras and cellular phones that realizes high definition quality comparable to those for silver salt film.

Trend Forecast of World DPE Market



Toray will expand businesses in the growing digital photo printing market with its excellent technology and the exclusive share over 90%.

Development Strategy for High-capacity Data Storage Films



Toray's Strength / Further Strengthening Policies

- ◆ Strong relations of trust with magnetic tape manufactures
- ◆ Advanced manufacturing technology developed by the precedent high-functional magnetic tapes
- ◆ World's first simultaneous biaxial drawing machine (M-6) for magnetic applications
- ◆ Development of new material with high modulus and good dimensional stability
 - Nano-alloy film SPALTAN*
 - Aramid film Mictron*



Expand business by proposing solution to achieve high data storage capacity

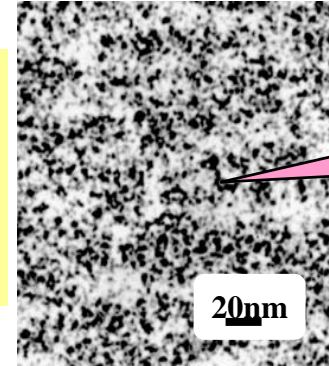
Next Generation Film for Data Backup



SPALTAN*, new film developed with nano-technology

Requirement

- Reduction of instant deformation caused by tensility and reduction of cross direction dimensional change
- Demand for high glass transition temperature (LTO Standard)



Polymer dispersion of nano-meter scale

Transmission electron microscope picture

Developed fine patterning technology (nano-alloy technology) and realized new properties by dispersion of different polymers in the nanometer scale.

Realized; High-rigidity / Dimensional Stability / High-resolution Surface

Mictron*, expand into mid-size server market

Utilizing outstanding high modulus and high dimensional stability of products, Toray will enter into the backup tape market for mid-size servers while increasing production capacity of film products

	Data Storage Capacity	Film Material by Data Storage Format	
		DLT	LTO
Current	~200GB	PET	PEN SPALTAN*
	~400GB	PET	PEN SPALTAN*
Next Generation	~800GB	PET	Next Generation SPALTAN*
Next next Generation	over 1TB	Mictron* Next Generation SPALTAN*	

Development of IT-related Business Area by Applying Resins Technology

Fundamental Technologies

Pursuit of Ultimate Performance

To IT-related Areas

Polymer Technologies

New Polymers

Polymer Design

High Heat Resistance

High Chemical Resistance

Compound Technologies

Nano-alloys

Fibers & Textiles /
Strengthening Fillers

Non-flammability

Forming

Molding Technology

Flow Analysis

Welding
Technology

High Thermal Conductivity

Plant-based,
Biodegradable

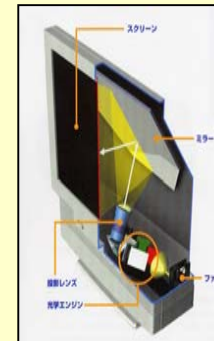
PPS resin
Torelina*

Laser diode components



Projector / P-TV

Lamp case



LCP resin **Siveras***

Fine pitch /
FPC connector



Light pickup / Lens holder



Polyimide resin
TI Polymer*

Detachment nail
of copier
anchorage zone



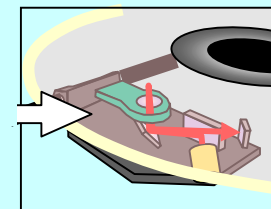
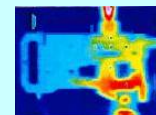
PLA resin **Ecodea***

Note PC / Housing



High thermal conductive PPS resin
(marketing planned in 2005)
Evaluated in use in light pickup
component

Evaluated
component



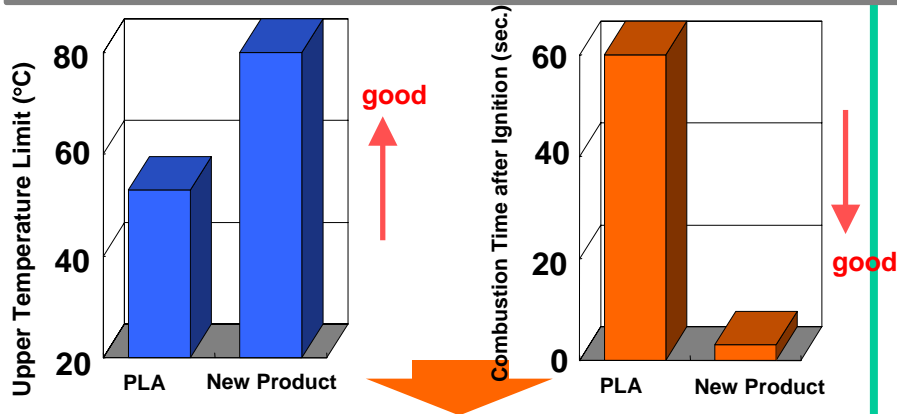
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Polylactic Acid Resins

- (1) Developed a new polymer-alloy for electronics applications to enhance the performance of PLA.
- (2) Contribute to environment preservation by reducing carbon dioxide emission and fossil consumption.

Non-halogen-based Flame Retardant

Realized advanced heat resistance and high flame retardant properties by applying alloy technology and non-halogen-based flame retardant technology



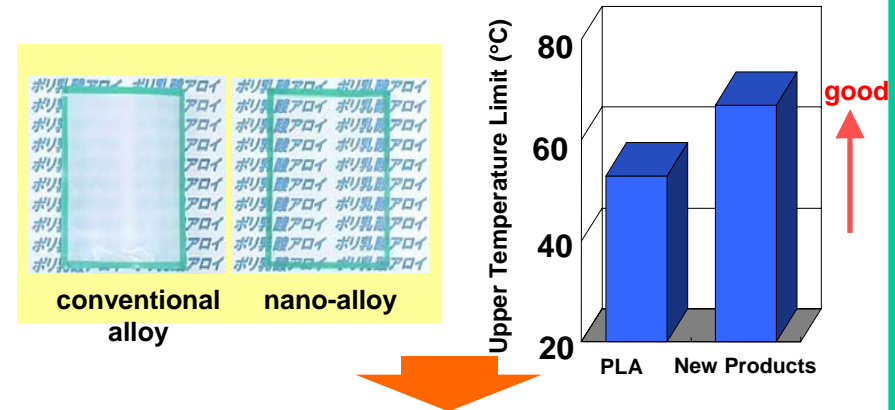
World's First! Plant-based PC chassis



Co-development with Fujitsu Japan → released in Jan. 2005

Transparent / High Heat Resistance

Improved heat resistance while possessing high optical properties by applying nano-alloy technology



DVD disk made of corn



Co-development with Victor Co. of Japan

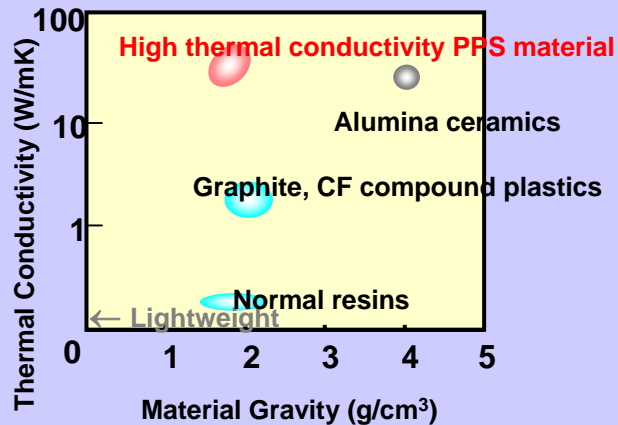
Thermoplastics with High Thermal Conductivity

Toray has developed a thermoplastic with the world's highest thermal conductivity, more than 100 times compared to conventional plastics, by applying Toray's unique technology to form a "conduction pass," a heat passage, by improving intermolecular interplay between the plastic and the high thermo-plastic filler.

<Advantages (comparison with aluminum and other metal, ceramics)>

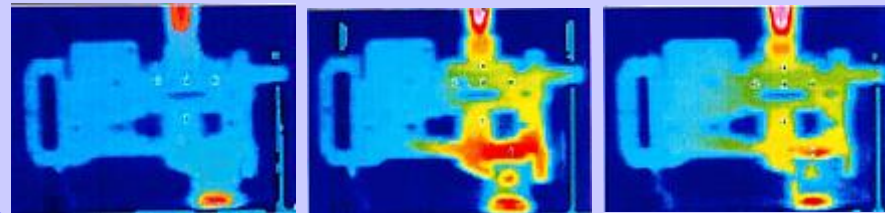
- ◆ Lightweight
- ◆ Quietness (no need of cooling fans)
- ◆ Low Cost
- ◆ High efficiency for complex processed moldings

<Thermal Conductivity and Material-Specific Gravity>



<Thermal conductivity of an actual part>

Newly-developed material dissipates heat as aluminum die-cast does



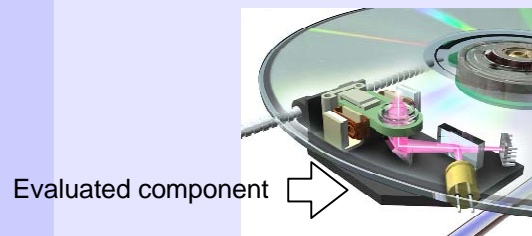
Conventional material

High-thermal PPS

Aluminum die-cast



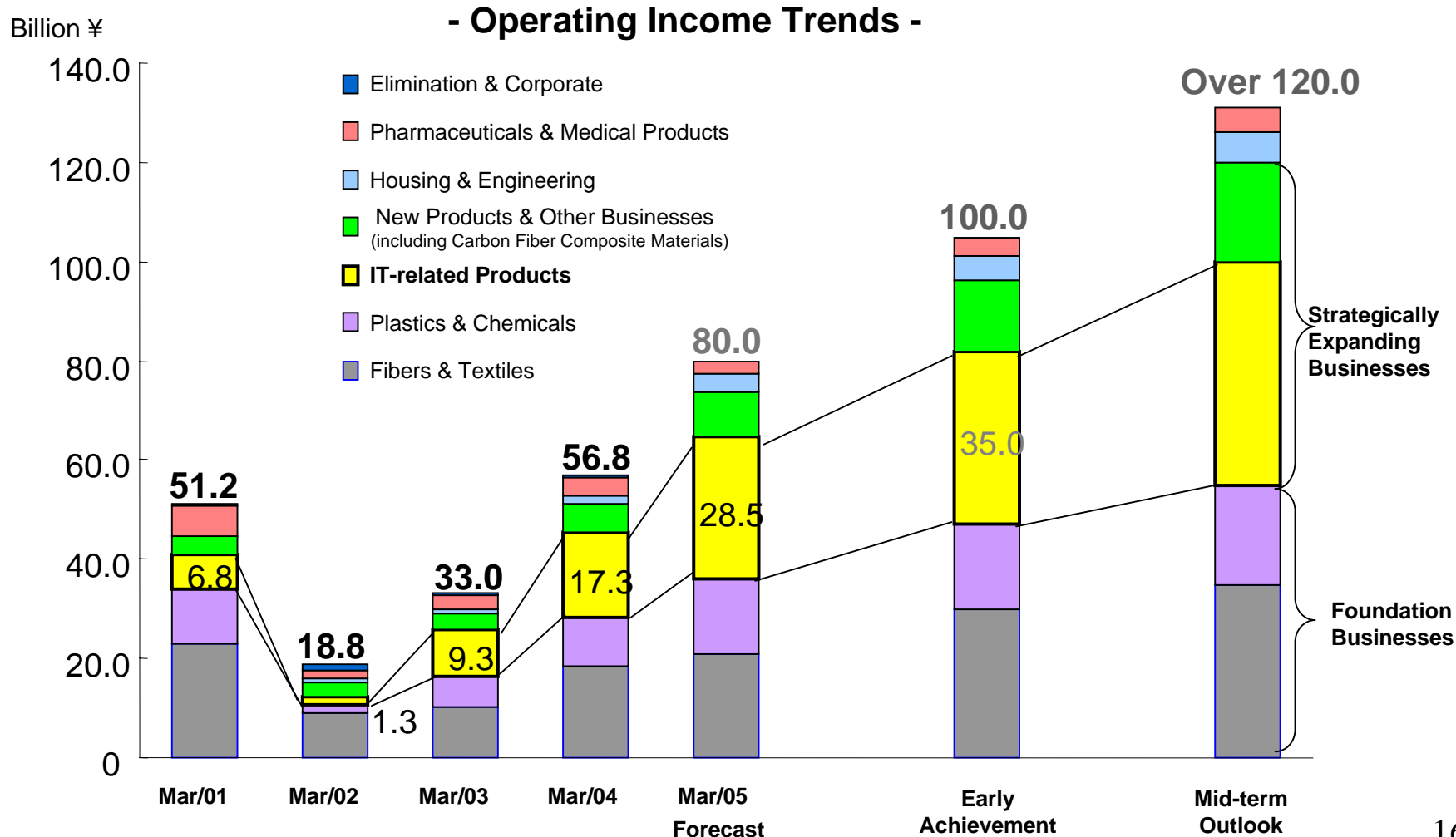
Evaluated in use for DVD-ROM optical component



Promote full-scale deployment in electronic components and automobiles areas including LED heat-release sockets and LSI radiator plates, etc.

Business Expansion of IT-related Resins and Films

Toray Group will expand businesses of IT-related Products Segment by developing and supplying IT-related films and resins products which will create new values in the digital-related business area.

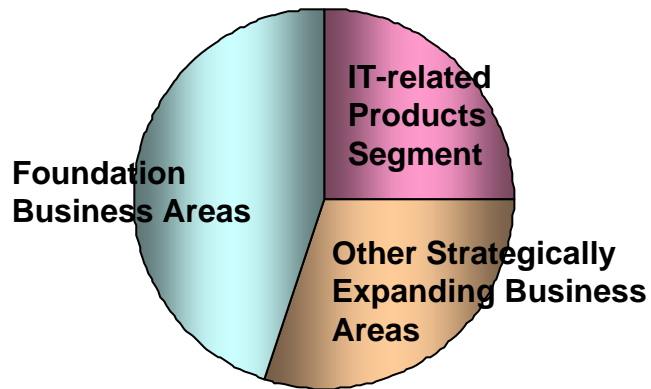


R&D Personnel and Expenditure of IT-related Products Segment **TORAY**

Focusing 2,800 persons as R&D manpower where $\frac{2}{3}$ is placed in strategically expanding business areas and $\frac{1}{4}$ in the IT-related Products segment.

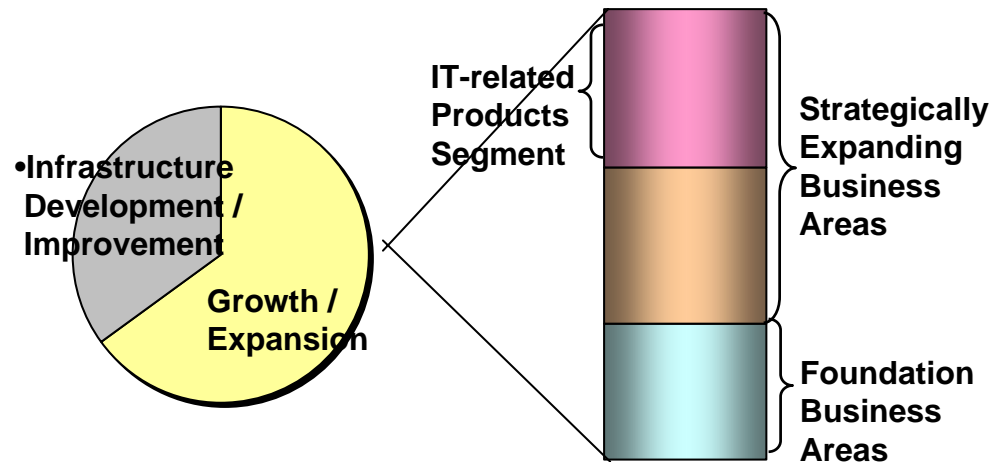
R&D expenditure is 250 billion yen in three years during 2004~2006 and will preferentially allocate resources to the IT-related Products segment which is included in the growing & expanding area accounting for $\frac{2}{3}$ of the total R&D expenditure.

Staffing of R&D Personnel



Total : approx. 2,800 persons

Resource Allocation for R&D



250 billion yen in 3 years (2004 ~ 2006)

•Infrastructure development / improvement = environment / safety / accident prevention / workforce adjustment / rationalization / maintenance, etc.