RESEARCH & DEVELOPMENT AND INTELLECTUAL PROPERTY

RESEARCH & DEVELOPMENT

BASIC STRATEGY

Since its establishment, Toray Group has fostered the core technologies of polymer chemistry, organic synthetic chemistry and biochemistry. While developing these technologies, we have expanded our business from fibers and textiles to films, fine chemicals and plastic resins. We continue to expand our business areas, which today include electronics and information-related materials, carbon fiber composite materials, pharmaceuticals and medical products and water treatment-related products and technologies. Toray Group recently designated polymer chemistry, organic synthetic chemistry, biotechnology and nanotechnology as its four core technologies. By employing and integrating these core technologies, we will continue developing a variety of advanced materials for growing markets.

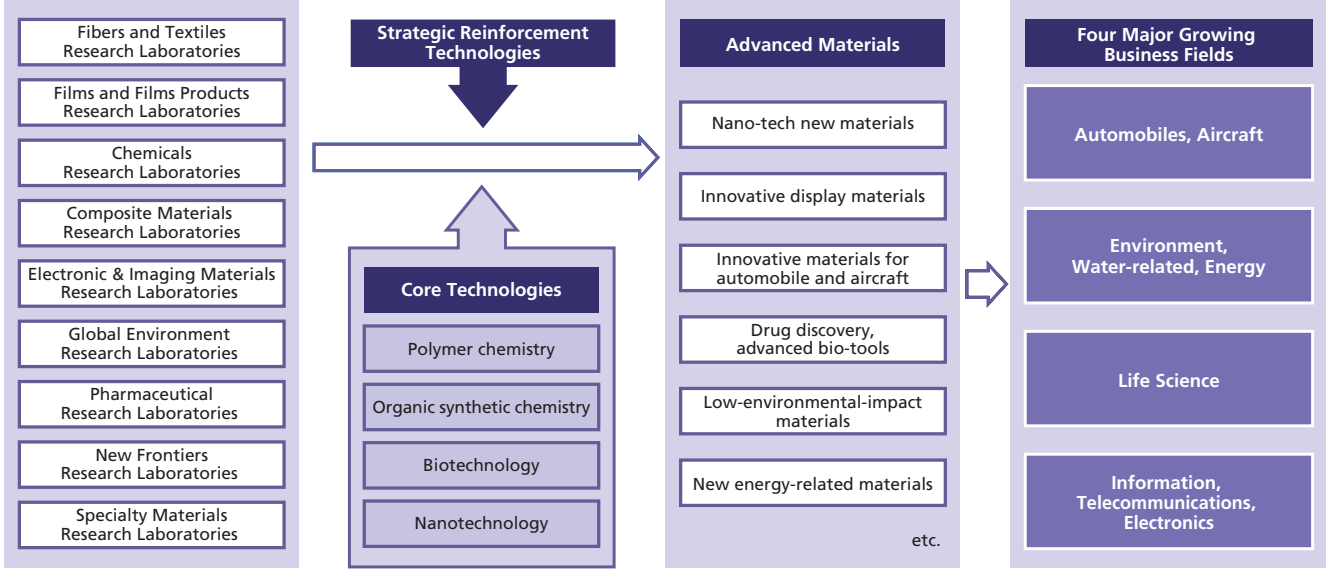
In April 2006, Toray Group formulated its long-term corporate vision, "AP-Innovation TORAY 21," with the goal of evolving into a global top company of advanced materials. To realize this vision, in October 2006 we implemented the mid-term business strategies "IT-2010," undertaking the challenge of further growth through innovation. Guided by "IT-2010," Toray Group has proactively implemented various activities to transform into a highly profitable business group. One of such activities is to introduce newly developed advanced materials in four major growing business fields: (1) Information, Telecommunications, and Electronics; (2) Automobiles and Aircraft; (3) Life Science; and (4) Environment, Water-related and Energy.

However, there has been a sudden and significant contraction in demand globally since the second half of FY Mar/09, and we recognize that recovery will take some time. In response to this dramatic change in circumstances, in April 2009 Toray Group launched its new medium-term management program, called "Project IT-II." While adhering to the fundamental underlying principles of "AP-Innovation TORAY 21" and "IT-2010," "IT-II" seeks to achieve greater efficiencies by reviewing research and development themes to enable the Group to overcome the current economic crisis. We will work toward further R&D successes by strategically allocating resources to top priority technological development themes expected to make an early contribution to the Group's earnings.

"IT-II" also sets out strategies for implementation after overcoming the economic crisis, to enable Toray Group to achieve sustainable growth once again as a highly profitable business group. In addition to expanding advanced materials in the four major growing business fields, it calls for Toray to take advantage of its products and technologies to provide solutions to factors constraining economic growth, such as problems related to preservation of global environment, depletion of fossil resources and energy and aging population with declining birthrate.

Toray Group is especially implementing Project EcoChallenge, which sets out proactive activities for conserving resources and preserving the global environment, with the aim of realizing a sustainable society with a low carbon footprint. Under Project EcoChallenge, we will continue R&D initiatives designed to foster the development of a sustainable recycling-oriented society.

Advanced Materials R&D Strategies

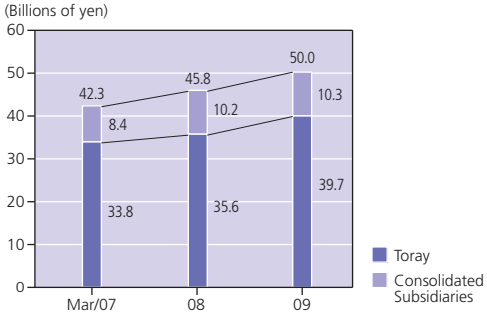


R&D EXPENSES

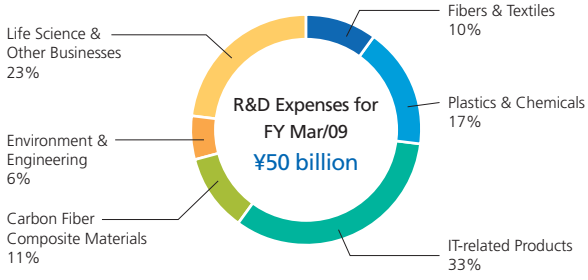
In FY Mar/09, we invested proactively in the development of advanced materials in the four major growing business fields. As a result, consolidated R&D expenses increased 9.2% from the previous year, to ¥50.0 billion. Non-consolidated R&D expenses totaled ¥39.7 billion.

In FY Mar/10, we plan to reduce R&D expenditures by 2%, to ¥49.0 billion. Guided by our strong conviction that research and development activities provide the key to creating the Toray of tomorrow, we will spend roughly the same as we did on R&D in the year under review, despite the current harsh economic conditions. We will strive to achieve greater efficiencies in R&D activities by allocating resources to top priority technology development themes expected to make an early return, and focus business resources on expanding advanced materials in the four major growing business fields. We will also concentrate on providing solutions to factors constraining economic growth, in anticipation that such solutions will become drivers of future growth.

R&D Expenses



R&D Expenses by Business Segment



INTELLECTUAL PROPERTY STRATEGIES

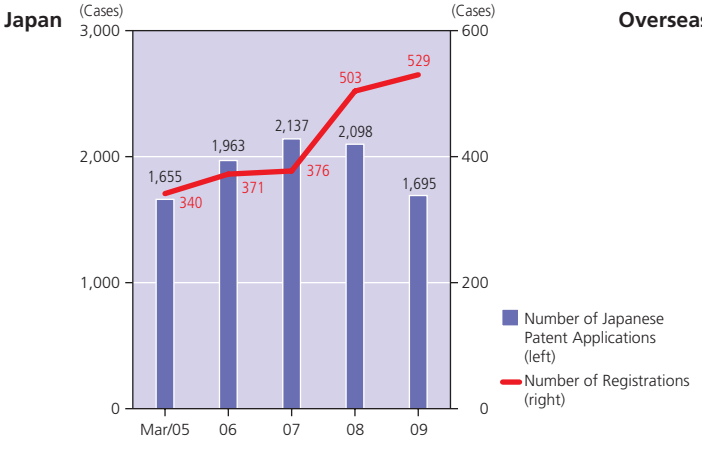
BASIC STRATEGY

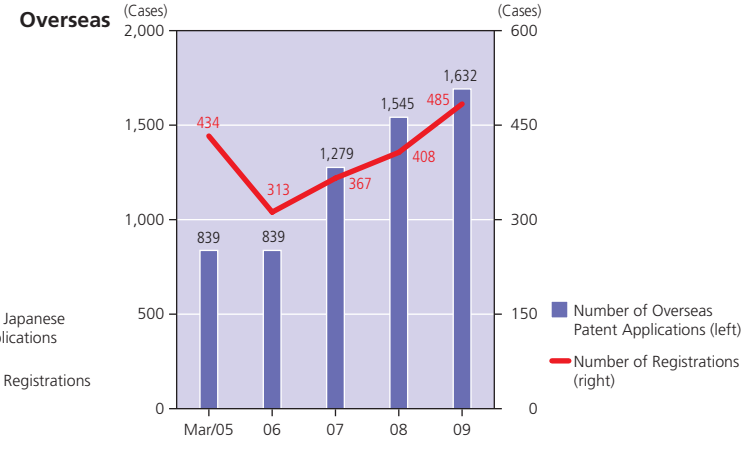
As a Group that targets dynamic progress and sustainable growth through innovation, Toray recognizes that strengthening its performance in intellectual property is an important management issue. It is vital that we link intellectual property strategies organically with business strategies and R&D strategies. In other words, the strategic trinity formed by the linking of the three types of strategies in accordance with management policy constitutes the cornerstone of Toray Group's intellectual property approach.

PATENT APPLICATIONS AND REGISTRATIONS

In FY Mar/09, Toray Group filed applications for 1,695 patents in Japan and 1,632 overseas. The number of patent registered to us is 529 in Japan and 485 overseas.

Patent Applications and Registrations





1 Molding of Automobile Platform with Carbon Fiber Composite Materials In Less Than Ten Minutes

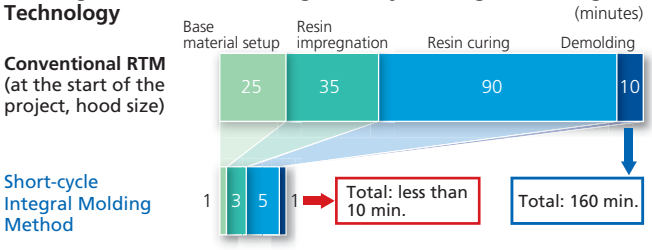
Toray has succeeded in molding the front floor of an automobile platform made out of carbon fiber reinforced plastics (CFRP) in less than ten minutes. Using CFRP instead of steel reduces the vehicle's weight by 50% and makes it 1.5 times safer in a collision by increasing the amount of energy it absorbs. Possessing lightweight and safety properties, CFRP is recognized as a next-generation structural material for vehicles. However, shortening CFRP molding time is critical in order to raise mass productivity and reduce costs. The "short-cycle integral molding technology" developed by Toray has achieved the aim of molding CFRP in a ten-minute cycle.

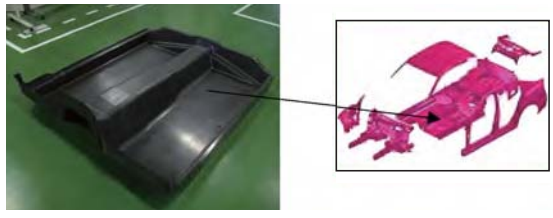
Toray developed its proprietary short-cycle integral molding technology by completely revising the conventional Resin Transfer Molding (RTM) method. In RTM, CFRP preform (layers of carbon fiber sheets cut to the shape of the part to be molded) is placed inside the mold, and resin is quickly injected into the mold and allowed high speed curing. This new technology led to the development of short-cycle molding resin which features dramatic improvements to fluidity, curing speed and thermal stability. Quality control is difficult in the conventional preform manufacturing process due to the considerable amount of manual labor that is required. However, we have solved this problem by developing an automatic preforming technology. Further innovations that contributed to achieving a ten-minute molding cycle include development of short-cycle injection method, whereby the resin impregnates the carbon fiber sheets evenly within three minutes, and an automatic carrier system.

In addition to automobiles, these newly developed technologies can be applied to the manufacture of aircraft and a wide range of other areas. We will continue R&D aimed at commercializing these technologies at Toray A & A Center (Automotive and Aircraft Center), which is the comprehensive R&D center for automobiles and aircraft applications.

Toray developed these technologies as the participant of the "R&D of CFRP Materials to Reduce Vehicle Weight" project, which is part of the Energy-Saving Technology Development Program sponsored by Japan's New Energy and Industrial Technology Development Organization (NEDO).

Molding Time Reduction Using Short-cycle Integral Molding Technology





The front floor of a platform formed in ten-minute molding cycle

2 "Bio-nylon" Prototype Made from Non-edible Biomass

Toray has succeeded in making a Bio-nylon prototype as a result of a research project on making polymer ingredients from non-edible biomass using microorganisms.

An amino acid, which was made by fermenting biomass, was converted to C5 diamine* by using enzymes found in microorganisms, which was then used to make the Bio-nylon.

Because C5 diamine is made using a bio-process that requires minimal energy input, the Bio-nylon is an advanced material that makes a substantial contribution to lowering greenhouse gas emissions.

It is possible to design Bio-nylon with a wide range of melting points ranging between 200˚C to over 300˚C, by adjusting the monomers combined with C5 diamine. We have also confirmed that Bio-nylon possesses the equivalent physical properties, mechanical properties and durability as nylons made from fossil materials. Accordingly, this new material has potential in diverse applications for fibers and textiles, plastics and resins and sheets and films.

* C5 diamine: Pentane-1,5-diamine, which has five carbon atoms, obtained by the decarboxylation of the amino acid L-lysine.