

Research and Development

Recognizing technological innovation as the source of sustainable growth, we continue to promote R&D in two domains—green chemistry and health care—emphasizing three core technological areas, namely, high-performance materials, green businesses and energy and life sciences. With the aim of enhancing the efficiency of R&D activities and shortening time to market, in fiscal 2010 we revised our R&D management system. We also expanded the Group Technological Strategy Committee to reinforce the sharing of information pertaining to market trends and intellectual property throughout the Teijin Group.

R&D Strategy: Focus on High-Performance Materials, Green Businesses and Energy and Life Sciences

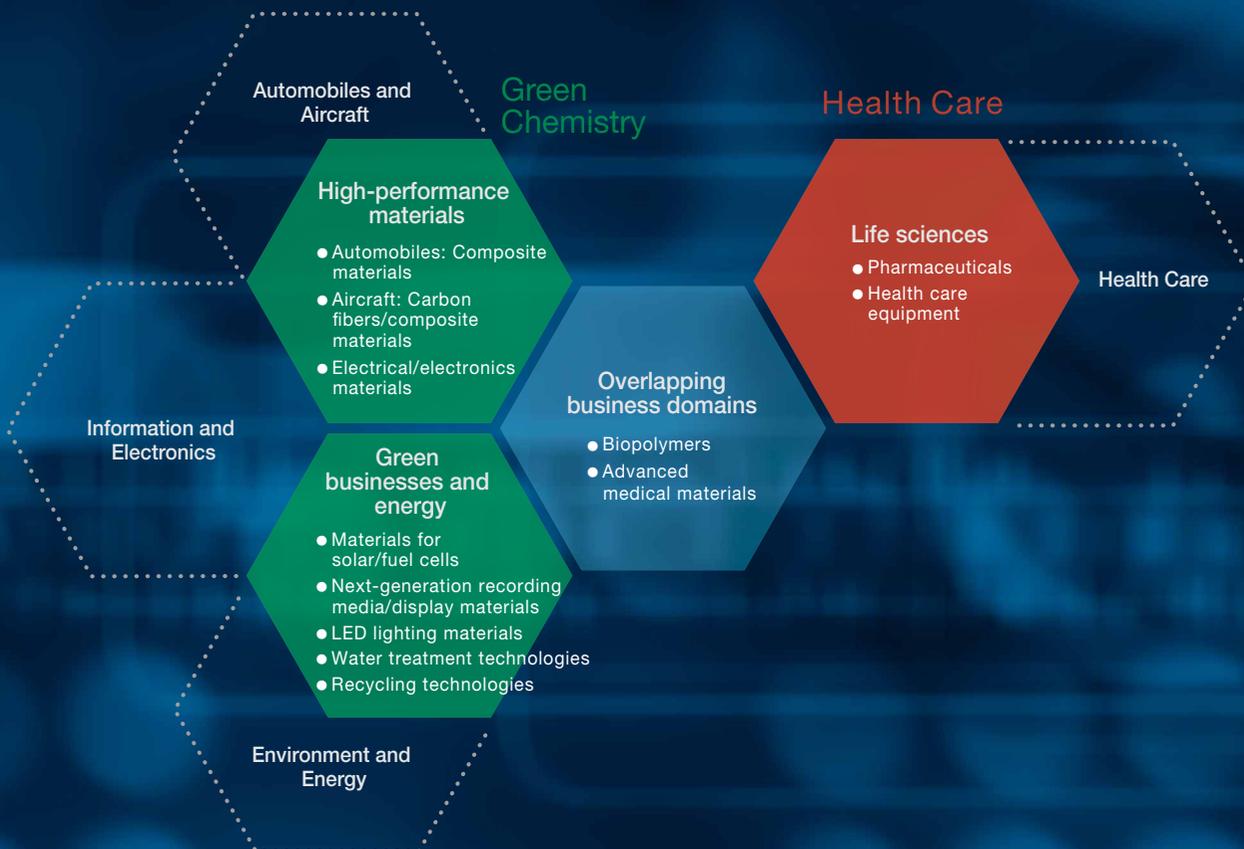
At present, we have nine major research sites in Japan and seven overseas, which together employ more than 1,600 researchers. We endeavor to conduct R&D that evokes our brand statement—“Human Chemistry, Human Solutions”—and to advance the development of original business models. We also work to expedite the transformation of technological achievements into commercially viable products.

For strategic purposes, we have grouped highly promising markets in

our three core technological areas into four key fields: automobiles and aircraft; information and electronics; health care; and environment and energy. By concentrating resources in these areas, we seek to provide solutions that respond to changing social imperatives. Having identified a number of crucial technologies that will be necessary for restructuring our business portfolio, we are also working to accelerate product development by establishing and promoting the effective management of development pipelines. To this end, we are further enhancing key technologies and creating new value by fusing basic technologies—including polymerization, catalyzing and other chemical technologies, and technologies used in pharmaceuticals, home health care and IT—with nanotechnology, biotechnology and other next-generation technologies.



Core Technological Areas



R&D Achievements in Three Core Technological Areas

High-Performance Materials

R&D in the area of high-performance materials focuses on balancing performance and price, as well as on adding value by making products more environment-friendly. Building on our success in developing a special polycarbonate resin that was adopted for use in the windows of Series N700 Shinkansen bullet trains, we have developed products for such applications as rear quarter windows for vehicles. We have also developed production technologies for carbon fiber composite materials that will make vehicles lighter, including the world's first mass-production technologies for thermo-plastic CFRP that achieves a molding time of less than one minute. By expanding into midstream and downstream processing for materials for automotive parts and electrical and electronics equipment, among others, we are determined to earn greater customer and market confidence and to enhance product value.

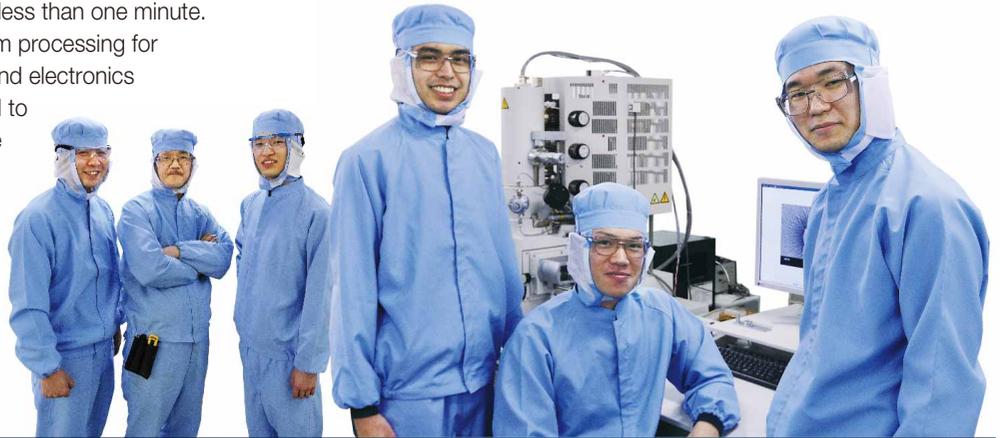
Green Businesses and Energy

In green businesses and energy, we are promoting cutting-edge R&D in such areas as high-performance bioplastics derived from inedible vegetation rather than petroleum;

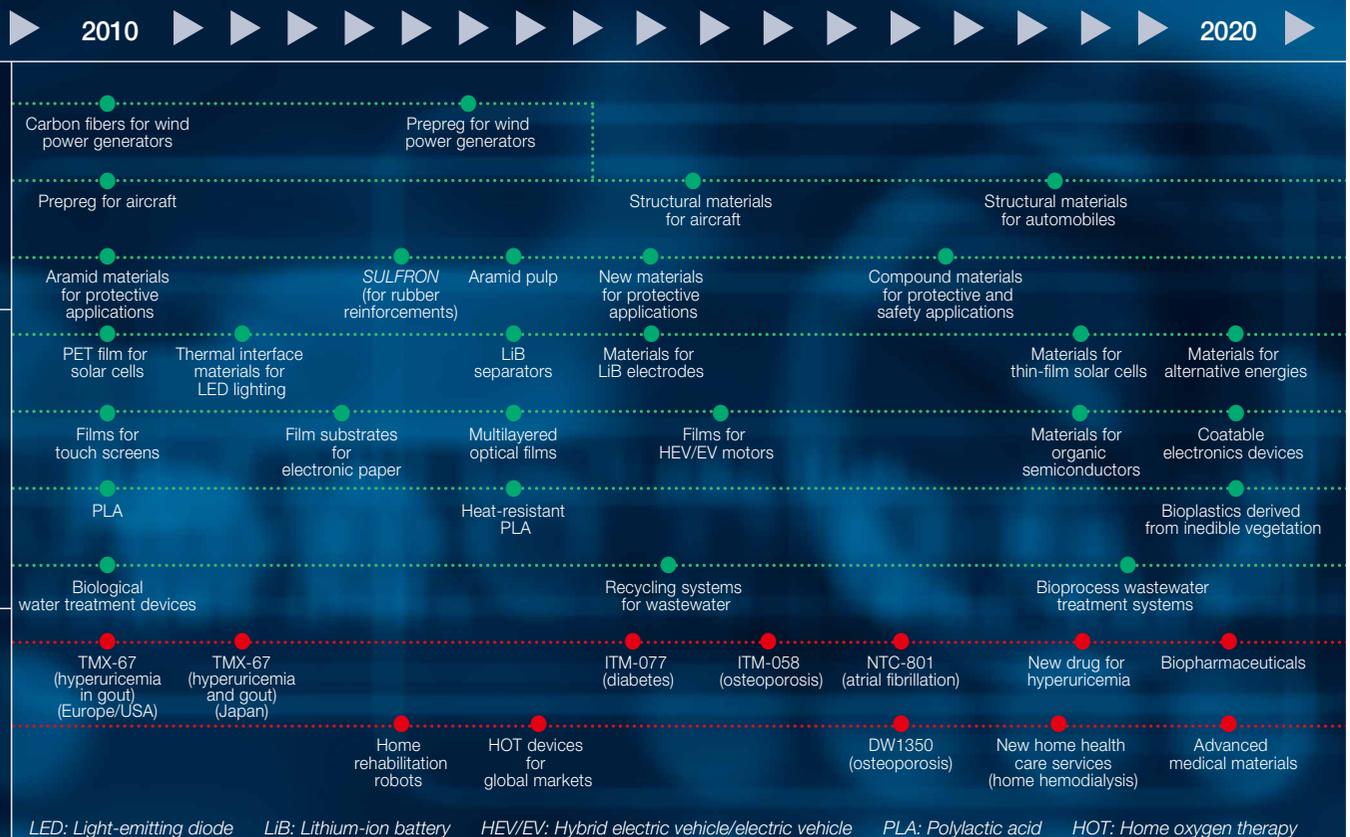
silicon inks with semiconductor properties, essential for printable electronics; biotechnology-based wastewater treatment systems; heat-dissipating materials made from carbon fibers; and LiB battery materials made with heat-resistant aramid materials.

Life Sciences

In the life sciences field, our focus is on the development of a cell-based drug for treating stroke, using technologies licensed in from SanBio, Inc., of the United States. In collaboration with Motorika Medical (Israel) Ltd., we are also developing rehabilitation robots designed to help stroke survivors regain lost function in their upper and lower extremities.



Teijin's Main Technology-Driven Product Development Pipelines



Reinforcing R&D Capabilities

With the aim of enhancing the efficiency of R&D activities and to hasten commercialization, in fiscal 2010 we revised our R&D management system. Of particular note, we modified R&D procedures, including those pertaining to pipelines for new products, a move that has enabled the Group's top management to better track development progress. We have also simplified development stages and clarified stage gates. Further, this configuration makes it possible for resources to be allocated to support business group-specific R&D efforts.

We have also expanded the Group Technological Strategy Committee, which centers on the Chief Technology Officer (CTO) and the chief technology officers in each business group. The committee provides a forum for the executives in charge of marketing and intellectual property to provide information pertinent to, among others, market trends and intellectual property in emerging economies, thus ensuring such information is shared with all business group chief technology officers.

R&D Activities in Fiscal 2010

Corporate Research

Corporate research encompasses basic research designed to fortify our Groupwide foundation in chemical synthesis and polymer science, with the aim of cultivating new products and businesses. In the environment and energy field, we succeeded in developing an 80% bio-derived polylactic acid (PLA) molding compound, made with our highly heat-resistant bioplastic *BIOFRONT*[®], in cooperation with Panasonic Electric Works Co., Ltd. In information and electronics, in July 2010 we acquired U.S. firm NanoGram, a move that enabled us to accelerate R&D in the area of silicon inks for

semiconductors with a view to the prompt commencement of mass production of materials for printable electronics. In health care, we instigated a new R&D project to facilitate our early entry into the high-growth market for advanced medical materials.

High-Performance Fibers

Aramid Fibers Targeting the promising market for materials for electrical and electronics applications, in June 2010 we commenced research aimed at developing aramid nonwoven fabrics engineered using special spinning technologies. In October, we developed a groundbreaking firefighting uniform made with *TRIPROTECH*[™], a newly developed meta- and para-aramid fiber fabric that is comfortably light and boasts superb heat-barrier properties, thanks to a proprietary air layer. We subsequently announced the decision to commercialize high-performance polyethylene products that offer excellent impact resistance and strength.

Carbon Fibers Here we continued to promote the development of carbon fibers with exceptional mechanical properties and carbon fibers for electrode materials that deliver outstanding electroconductivity and resistance to corrosion, as well as carbon fiber composites for aircraft applications. In addition, we continued to refine production technologies for composite materials used in automotive parts.

Polyester Fibers

R&D in this business group focuses on the development and commercialization of materials that incorporate consideration for human health and of environment-friendly technologies. In the former category, we developed *ECOPURE*[®], an innovative pH-balanced polyester material that does not irritate human skin. In the area of environment-friendly technologies, we developed polyethylene naphthalate (PEN) fibers that significantly improve the impact resistance and reduce the weight of reinforced plastics, as well as polyester fibers that can be dyed using energy-efficient ambient-temperature and ambient-pressure processes. In addition, we began working toward full-scale production and sales of a new line of 30% bio-derived PET products under the brand name *ECO CIRCLE*[™] *Plantfiber*, scheduled for launch in fiscal 2012.

Films and Plastics

Plastics Our polycarbonate reverse-dispersion retardation film continued to find favor with manufacturers for use in antireflective film for organic light-emitting diodes (OLEDs). During the period,



this film also earned Teijin an award of the Society of Polymer Science, Japan.

R&D efforts in this business yielded the *Panlite*® ML-5200 series of light-diffusion grade polycarbonate resin products for LED lighting applications that combine superb flame resistance with high transparency. We also commenced production and marketing of *Panlite*® SP-3810, a newly developed polycarbonate resin with a high refractive index and extremely low birefringence for use in mobile phone and other camera lenses that accommodates the trend toward higher picture quality and smaller lens size. Further, we succeeded in developing mass-production technologies for a new biopolycarbonate resin that is made primarily with bio-derived isosorbide and boasts outstanding durability, transparency and moldability.

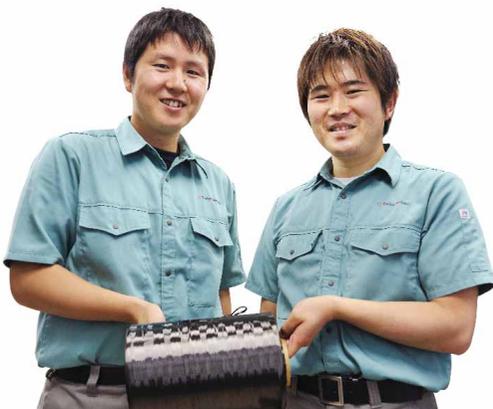
Films In the area of products for optical applications, we commercialized a new ultrahigh-transparency film for FPDs and touch screens. For environmental and energy-related applications, we began mass production of a new highly durable film for solar cell back sheets. For information-related applications, we proceeded with efforts to develop next-generation base films for data storage media. Additionally, we focused on promoting the use of *Teonex*® PEN film in printable electronics and the automotive sector and of *Teflex*® formable PET film in automotive interior and exterior materials and components. We also worked to perfect technologies to facilitate the use of multilayered films in a variety of new areas.

Pharmaceuticals and Home Health Care

Pharmaceuticals In May 2010, we commenced phase I clinical trials for GTH-42J, a new jelly formulation of osteoporosis treatment *Bonalon*®.* In January 2011, we received approval from Japan's Ministry of Health, Labour and Welfare to manufacture and market TMX-67 for treating hyperuricemia and gout in Japan. The same month, the Ministry approved the use of *Alvesco*®, an inhaled steroid bronchial asthma treatment, for asthma in children—a new indication.

Home Health Care In April 2010, we augmented our rental lineup for home oxygen therapy (HOT) with *Hi-Sanso*™ 5Fx, an energy-efficient high-performance oxygen concentrator. In July 2010, we introduced *Hi-Sanso*™ 7R, an oxygen concentrator that delivers enhanced levels of safety, security and energy efficiency, as well as an around-the-clock remote oxygen-concentrator monitoring system that uses Japan's mobile phone network.

* *Bonalon*® is the registered trademark of Merck & Co., Inc., Whitehouse Station, NJ, U.S.A.



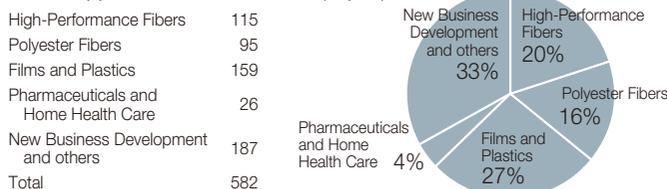
Intellectual Property

In line with our forward-looking growth strategies, we have designated a number of core technological areas and key fields in which we are working to create, protect and make effective use of intellectual property.

The driving force behind these efforts is Teijin Intellectual Property Center Limited, which works closely with intellectual property specialists in individual business groups to expand our patent portfolios and extend patent terms by fostering inventions and new technologies, products and processes; applying for patents; securing intellectual property rights; and analyzing competitors' patent information. To enhance the effectiveness of intellectual property management, we are selective in seeking patent protection, maintaining a high percentage of applications for achievements related to key Groupwide technological themes.

The Teijin Intellectual Property Center has established an intellectual property strategy office, which is tasked with ensuring information pertaining to achievements and challenges with respect to intellectual property is shared with management. The office is establishing a mechanism for clarifying the current state of our intellectual property portfolio and determining strategic directions.

Patent Applications in Fiscal 2010 (Japan)



Patent Applications Related to Key Technological Themes

