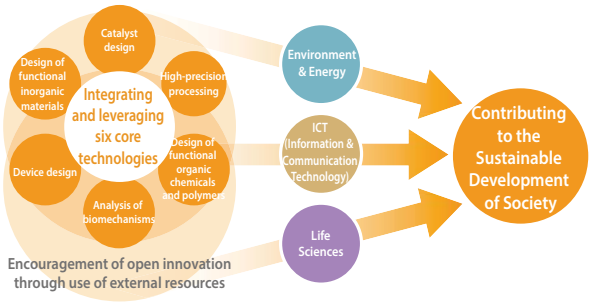
Special Feature 4

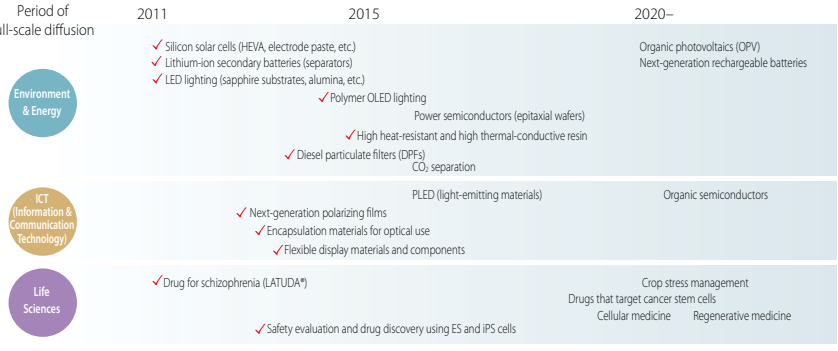
Developing Next-Generation Businesses

Sumitomo Chemical has developed six core technologies honed in a wide range of fields over many years. We are promoting Creative Hybrid Chemistry to develop innovative products and technologies by combining these six technologies as well as pursuing open innovation that integrates these core technologies with outside expertise. In particular, Sumitomo Chemical aims to contribute to the development of a sustainable society by focusing on the three key areas of the Environment & Energy, Information & Communication Technology (ICT), and Life Sciences.

Promoting Creative Hybrid Chemistry



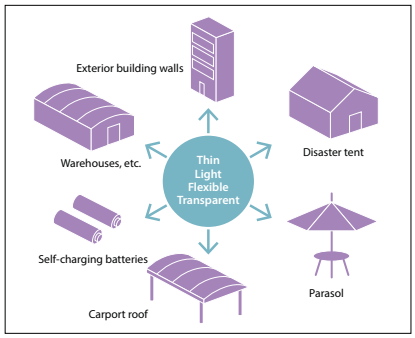
Next-generation business development schedule



< Environment & Energy >

Portable Solar Power

In light of the worldwide spread of solar power generation, Sumitomo Chemical continues to develop organic photovoltaics (OPV). Mainstream silicon-based solar cells are heavy, restricting where they can be installed, and require a large amount of energy to manufacture. OPV feature a superior thin, light, flexible and transparent design as well as require minimal energy to manufacture and install. As a result, OPV can be installed in places that would be difficult for conventional solar panels, such as windows, vehicle sunroofs and exterior building walls. OPV are suitable for a wide variety of applications as they can be folded into compact sizes, making them easy to carry and use as power sources in portable devices. Sumitomo Chemical's OPV have achieved world-class energy conversion efficiency.




Organic photovoltaics (OPV)


OPV trial product
(installed on window glass)

Improving Solar Cell Power Generation Efficiency

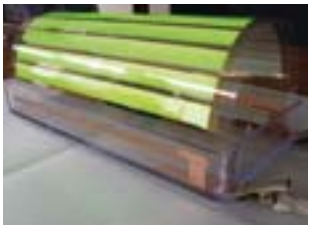
Power output erosion during long-term use in high-voltage conditions had been a major issue for solar cells. In response, the concentration of vinyl acetate (VA) was lowered within solar cell encapsulant sheets ethylene vinyl acetate (EVA), which protect cell power generation functions. However, this method had drawbacks in terms of lowering sheet transparency, which reduces power generation efficiency. Sumitomo Chemical has developed a new grade of its longstanding product SUMITATE® EVA as a novel encapsulant sheet material for solar cells that prevents declines in power output without reducing VA concentration, thus maintaining high transparency. An accelerated Potential Induced Degradation (PID) test conducted by a third-party evaluation organization has found that the rate of decrease in solar cell power output improves significantly from 94% with the Company's current grade of EVA to just 3% with the newly developed EVA compared with existing products.

< ICT >

Contributing to Display Versatility

Displays are widely used in mobile and other devices. While most displays use glass components, Sumitomo Chemical has been engaging in R&D to replace glass with plastic components by leveraging its materials development capabilities and optical product design technologies cultivated to date. Barrier films currently being developed are able to protect organic light-emitting diode displays and OPV from moisture, which deteriorates them on contact, in order to enable the use of plastic components with high gas barrier properties. In addition, use of plastic components reduces weight, increases flexibility, and broadens design properties, making it possible to expand their use in various fields.

Moreover, Sumitomo Chemical is focusing its efforts on developing technologies known as printed electronics, which do not require vacuum or high temperature processes to form electronic circuitry and devices on plastic substrates using printing technologies. Products developed based on printed electronics feature thin, light, flexible and bendable (yet difficult to break) characteristics, which is anticipated to significantly lower costs. This technology is expected to be used in a wide array of products, including organic light-emitting diode displays and OPV.


Polymer OLED lighting with light-emitting materials printed on film surfaces


Barrier film

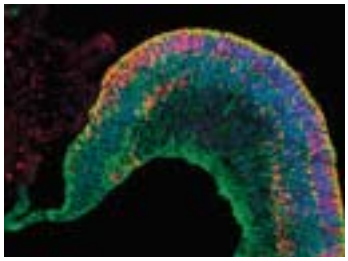
< Life Sciences >

Developing the Potential of Regenerative Medicine

Throughout the world, pluripotent stem cells such as ES and iPS cells show promise in such areas as regenerative medicine, pharmaceutical development, and chemical safety assessments owing to their ability to differentiate into various types of cells within the human body. Sumitomo Chemical has been conducting research for many years using ES and iPS cells as toxicological safety assessments for chemicals, developing differentiation-inducing technologies to transform human ES cells into heart, liver, and nerve cells. Through joint research with the Riken research institute, Sumitomo Chemical has created the world's first technologies to stably produce retinal tissue from human ES cells.

Currently, Sumitomo Dainippon Pharma Co., Ltd., a group company of Sumitomo Chemical, is conducting joint R&D with Riken to develop regenerative medicine for treating age-related macular degeneration and retinitis pigmentosa by applying these technologies from iPS cells. Taking the first step towards central nervous system-related regenerative medicine, Sumitomo Dainippon Pharma became the first company in the world to commence businesses focusing on regenerative medicine research in the ophthalmology field which has advantages in clinical applications and safety.

The Sumitomo Chemical Group aims to generate new innovations in regenerative and cellular medicine based on research results accumulated to date and by promoting open innovation.


Retinal tissue
including ciliary margin