

Smart



Providing solutions with the technologies and products required by the electronic materials market to support society and technological innovation.

Business Overview

Cellulose acetate (TAC) for optical films for LCDs, for which Daicel commands a large share of the global market, is made and sold by the Display Business. By making the best use of original materials and compound techniques, the business also makes and sells high-performance optical films for in-car displays, educational displays, smartphones, and tablets.

The IC/Semiconductor Business develops and produces high-performance resist materials and solvents for electronic materials used in the manufacturing processes of semiconductors and displays, which play an essential role in advancing semiconductor functionality.

Products manufactured and sold by the Sensing Business include thin, bendable, low-power-consumption film sensors, organic semiconductors, small yet high-performance wafer-level lenses made with high heat-resistant resin, and silver nano inks used for printing low resistance circuits on various kinds of films. All these products have contributed to the development of the sensor market, which is growing along with the heightened demand for sensor-based visualization in the wake of the broadening use of 5G, IoT, and AI.

Business Environment

- Growing demand for displays in China and emerging economies
- Full-scale advent of the 5G, IoT, and AI era
- Increasing demand for visualization and sensing technologies

Strategies

- Developing products with unique features ahead of market trends
- Carrying out global and e-marketing campaigns
- Reinforcing production techniques toward higher quality and more constant cost competitiveness
- Maximizing value through co-creation and collaboration

SDGs Relevant to these Segments



Performance Highlights (Consolidated)

Net sales (FY2020/3)

¥25.3 billion

Operating income (FY2020/3)

¥3.4 billion

TOPICS

Daicel Acquired PI-CRYSTAL to Help Drive the AI/IoT Revolution

In January 2020, Daicel acquired PI-CRYSTAL, Inc., a start-up with organic semiconductor technology developed at the University of Tokyo.

Unlike conventional silicon/inorganic semiconductors, organic semiconductors are flexible and foldable. Moreover, organic semiconductors use less power than silicon devices. Demand for organic semiconductors is therefore

■ PI-CRYSTAL's organic semiconductor



Flexible organic semiconductor made with a film-coating technology developed solely by PI-CRYSTAL

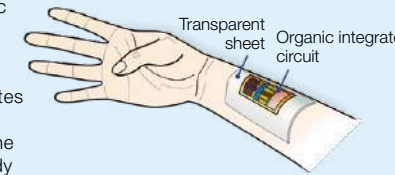
expected to grow in the fields of IoT sensors and displays. By using cutting-edge film-coating technology as its core technology, PI-CRYSTAL develops, produces, and sells high-performance organic semiconductor devices.

Printed electronics, which are printing techniques for creating electrical circuits and devices, represent a key focus for Daicel, and we have grown the business through external collaborations. PI-CRYSTAL has been one of our partners since its founding in 2013, and we have worked together to develop a method for applying Daicel's printed electronics materials and products for organic semiconductor devices. By combining our material development techniques with their state-of-the-art organic semiconductor technology, we are gaining the capability to mass-produce organic integrated circuits for sensors, indispensable for advancing AI and IoT, and for digital signage solution, toward commercializing our printed electronics products.

■ Expected applications

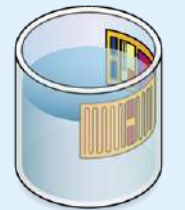
1 Healthcare sensor device

Mounting an organic integrated circuit on a transparent sheet attachable to the human body facilitates the gathering of information about the subject such as body temperature.



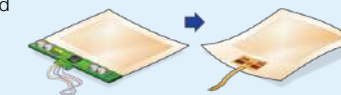
2 Device affixable to curved part surfaces

The device will improve the accuracy of laboratory instruments for chemical and medical use. Since it can be affixed to plastic parts, it can be downsized for in-car IC sensors.



3 For downsizing electronic components

It also enables part modules to be thinner and more flexible.



4 Lighter and more flexible large-size digital signage

The use of active-matrix elements composed of PI-CRYSTAL's organic semiconductor can make digital signage with a large-size LED display flexible and very lightweight.

Business Overview of FY2020/3

Sales by the Display Business declined from the previous year due to decreased sales volume of TAC, although the sales of high-performance car-use optical films rose. Sales by the IC/Semiconductor Business decreased year-on-year due to a weak semiconductor market. Sales by the Sensing Business increased year-on-year thanks to the sales growth of wafer-level lenses.

The wider introduction of 5G and self-driving technology

will encourage a rebound in the semiconductor market. And the trend toward smaller, high-performance electronic devices will require more sophisticated materials. To meet the needs of customers, we are advancing our resist materials to support the microfabrication of semiconductors and honing our techniques for solvents for electronic materials and other unique products.