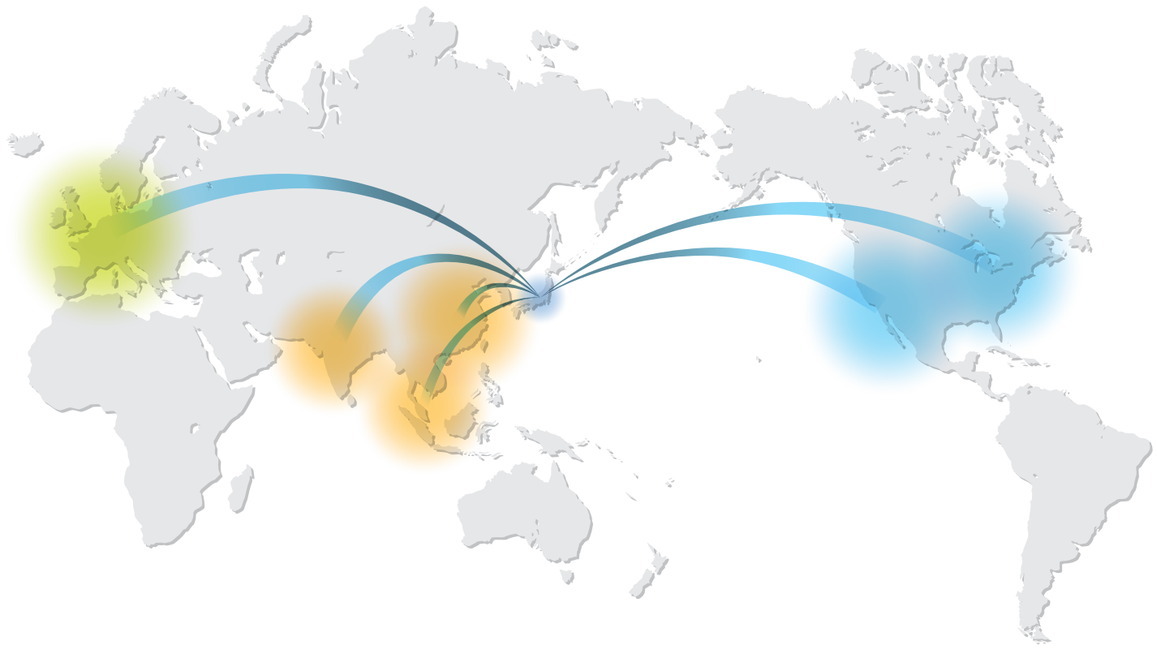
Global Locations



Corporate Data

Corporate Name	Daicel Corporation
Incorpotated	September 8, 1919
Head Office	Osaka Grand Front Osaka Tower-B, 3-1, Ofuka-cho, Kita-ku, Osaka, Japan Tokyo JR Shinagawa East Bldg., 2-18-1, Konan, Minato-ku, Tokyo, Japan

Osaka Head Office

Tokyo Head Office

DAICEL Corporate Website
https://www.daicel.com/en

DAICEL CORPORATION

Innovation Park

1239, Shinzaike, Aboshi-ku, Himeji-shi, Hyogo 671-1283, Japan

TEL:+81-79-274-4070

FAX:+81-79-274-4074

2023.08.100.HP

Innovation Park

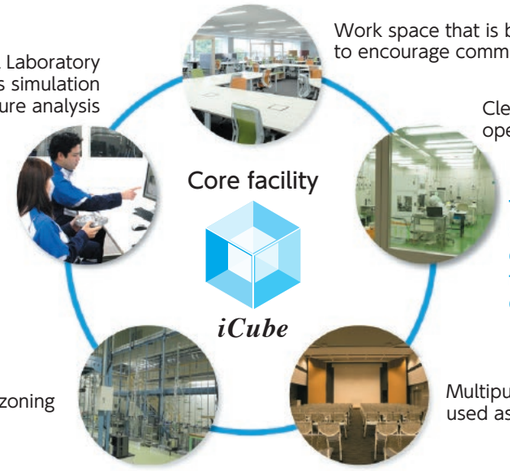
DAICEL
Sustainable Value Together

DAICEL CORPORATION

iCube

The new building is commonly called "***iCube***," and this name refers to three innovations: "Production," "Process," and "Product."
It accelerates work style transformation and provides a venue for proactively collaborating with external parties.

Innovation Park is a core R&D site that develops innovative solutions by eliminating barriers between departments, strengthening cooperation among corporate divisions, and combining in-house and external knowledge, technology, and know-how.



For more than 100 years since the days of the celluloid company that preceded the establishment of Daicel, the Ijinkan (a Western-style wooden building used as a residence for celluloid engineers invited from Europe) has been preserved as a historical heritage along with the area's eucalyptus trees. We named this area "Innovation Park" (commonly called "***iPark***") as a site for looking forward to further development while inheriting the achievements and history of our predecessors.

By gathering various departments in the same venue, we are creating new businesses, strengthening our existing businesses, and promoting value creation from numerous perspectives.

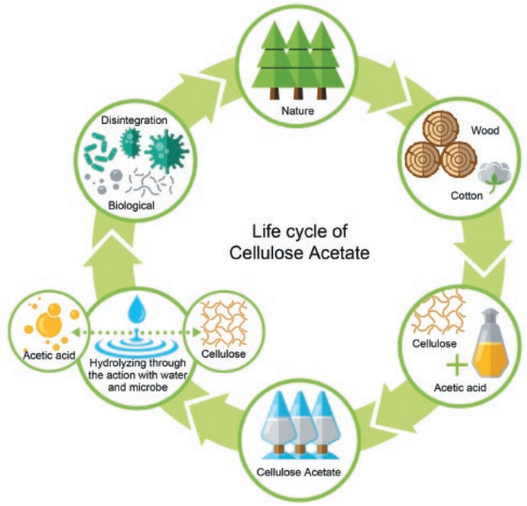
■Efforts based on the Sustainable Management Policy

Sustainable Product

Contributing to the happiness of society and people

Capturing social needs such as those for conversion to renewable biomass raw materials and solution of the plastic garbage issue, we are making efforts to develop biodegradable plastics that use naturally-derived cellulose acetate and to study metal recovery.

By thoroughly and faithfully engaging with our customers, we build relationships of trust while exploring their needs and providing solutions as we maximize synergy effects, and we promote value creation that contributes to the realization of a circular society.

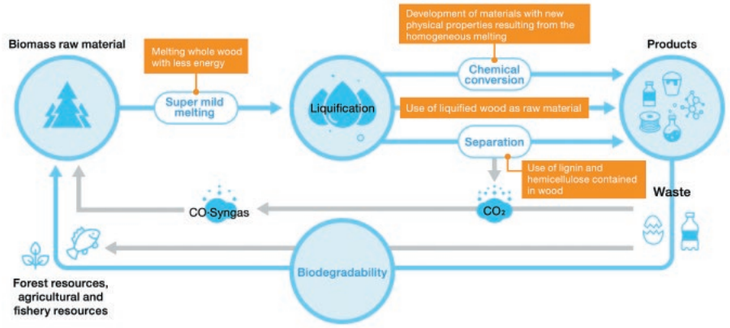


Sustainable Process

Approaches that are friendly to the earth and people

As part of the chemical industry, an industry that is known to consume large quantities of energy, we have set a goal of "contributing to building a circular society."

Toward achieving carbon neutrality in 2050, we are taking on challenges such as the New Biomass Product Tree for thorough use of timber, a natural resource; technological development to reduce CO_2 into CO and reuse the output; and micro fluid devices that do not require separation and a recovery process, which use large amounts of energy.



Sustainable People

Enabling workers to feel satisfied with their jobs

We are developing a working environment that enables our diverse employees to grow while establishing their own presences and experience fulfillment.

Through ABW (Activity Based Working*) and the introduction of an office casual dress code that enables individuals to select their clothes according to how they work, we are making efforts to enable our employees to produce further creative achievements and improve work efficiency as they work actively.

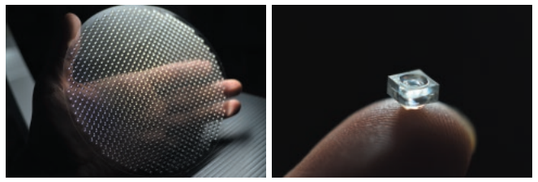
*Activity Based Working (ABW) is a workplace model that provides employees with different work environments for different types of work.

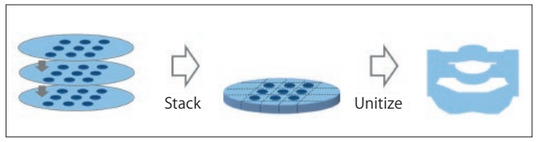
Innovation and Business Development

All Resin (Monolithic) Wafer Level Lens

We are developing small-sized lenses. A large number of lenses can be produced in a single molding operation thanks to our ability to manufacture a few hundred to a few thousand lenses on a palm-sized wafer.

By laminating lenses while keeping a wafer shape, multiple stacked lenses can be produced in one pass. In this way, the Wafer Level Lens (WLL) enables us to produce lenses very efficiently.





■ **Features**
- Small
- Thin
- Heat resistive

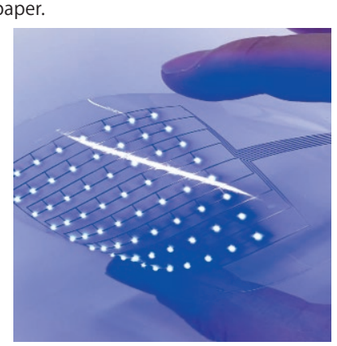
■ **Applications**
- Smartphones
- Home security systems
- VR/AR
- On-vehicle

Materials for Printed Electronics

Some electronic components used in smartphones and other devices are made by printing. The performance of electronic components is determined by how beautifully they can be printed.

We offer “Functional Solvents" for use in inks, the key to printing materials.

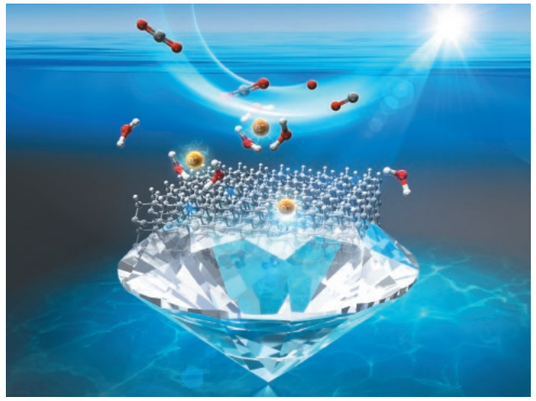
We are also working on the development of technology for making “Organic Semiconductors" by printing and “Silver Nanoparticle Ink”. Silver nanoparticle ink becomes electrical wiring, and organic semiconductors become thin and bendable sensors like paper.



Nanodiamonds

Nanodiamonds (NDs) are a type of diamond at nanometer scale (one billionth of a meter) created by utilizing an ultrahigh temperature/pressure environment produced by the detonation of an explosive. As nanodiamonds are added to various materials, they are useful for improving the functions of the base material as well as the expression of new functions.

NDs also have a chemical property whereby they discharge electrons upon exposure to sunlight. By utilizing this property, we have developed a technology for reducing carbon dioxide to turn it into a resource and aim to use this technology as an ace in the hole towards realizing a decarbonized society.



Pharma excipients
GRANFILLER-D® and HiSORAD®

We develop products and technologies to make tablets easier to swallow in order to improve medication adherence. GRANFILLER-D® and HiSORAD® are co-processed excipients for orally disintegrating tablets (ODTs). These co-processed excipients enable manufacturers to produce high-performance ODTs, which achieve both “sufficient hardness” and “fast disintegration.”

GRANFILLER-D® / HiSORAD®

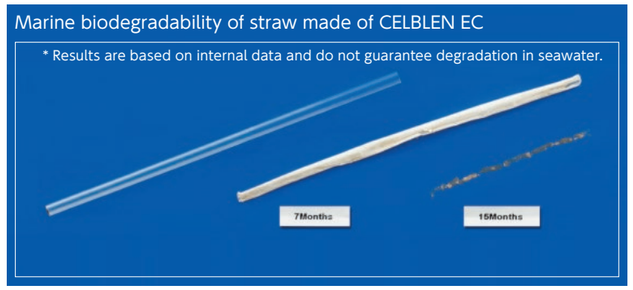
■ Features of ODTs
- Reliability : ODTs disintegrate quickly upon contact with saliva in the oral cavity, ensuring the medication is reliably taken.
- Safety : ODTs can be taken safely by patients at risk of aspiration.
- Convenience : ODTs can be taken anytime, anywhere without water.

Environment

Biodegradable biomass-based plastics

We developed cellulose acetate “CAFBLO®” with significantly improved marine biodegradability to address the problem of marine plastic waste. In August 2021, CAFBLO acquired the international certification “OK biodegradable MARINE,” which confirms marine biodegradability.

Thermoplastic cellulose acetate resin “CELBLEN® EC” is a unique biomass-based material featuring recyclability, marine biodegradability, and transparency, and we are developing its usage under the concept of “a material made from wood that can be returned to nature.”



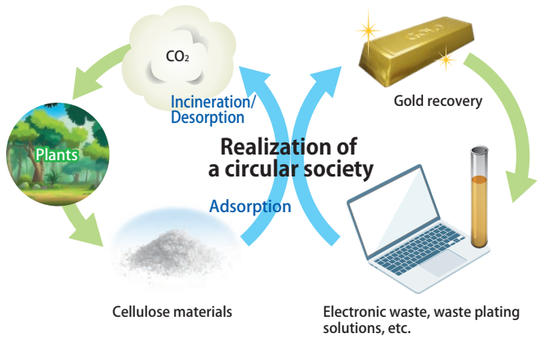
Utilization of biomass in new processes

Through environmentally-friendly processes, we are making efforts to establish technologies for creating high-performance, high-value-added products from forest resources, which are abundant in Japan, and surplus biomass, including agricultural waste, and to achieve the “Biomass Value Chain concept” for linking value creation by the aforementioned technologies with the regional primary sector.

In 2022, we established the Biomass Green Innovation Center on the campus of Kanazawa University as a base of study with the aim of achieving open innovation through private-public-academic co-creation. We are working on implementing technology for dissolving biomass-derived rare metal adsorbing materials such as cellulose and lumber in temperate conditions in order to make progress towards the goal of realizing a circular society.

Biomass Green Innovation Center (established in 2022)

Gold adsorbent



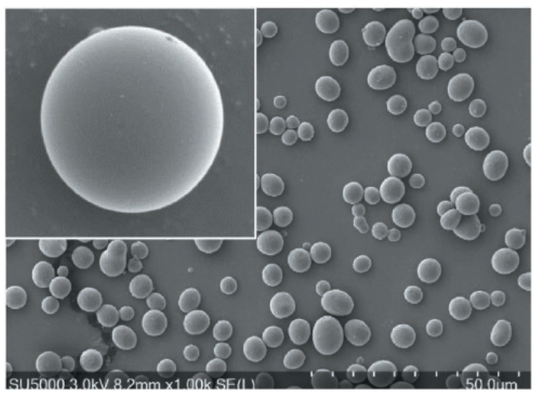
We are now developing a new cellulose material that can capture gold ions selectively with high efficiency from electronic waste and waste plating solutions. Since this material preferentially adsorbs only gold even in the presence of other metals, we believe we can greatly reduce the number of refining processes.

The adsorbed gold can be easily desorbed just by making contact with water. In addition, we can obtain gold without residue by incineration because cellulose material is easy to burn. Thus, we expect that this material will lead to effective use of recycling resources.

BELLOCEA®-Texturing agent for Cosmetics

ELLOCEA® is highly spherical and micron size Cellulose Acetate Beads that gives smooth feeling and high spreadability as cosmetic ingredients. Daicel’s state-of-the-art product and technology solve the world’s microplastics issue, and it is gentle to people and friendly to the environment.

BELLOCEA®

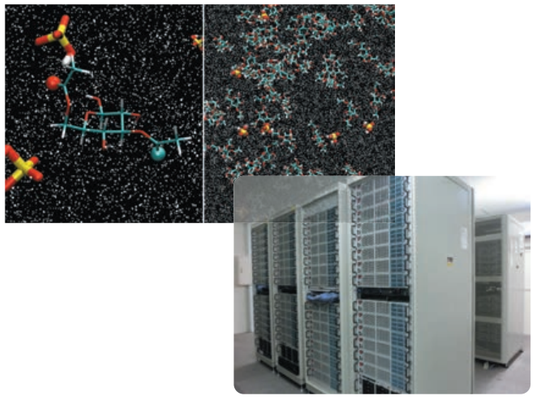


Analysis and Process Development

Application of advanced simulation

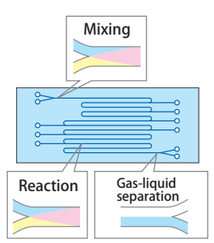
Advanced simulations accelerate both development and investigations to solve problems. Such simulations can be realized by high-performance computers, which we utilize to find solutions by analyzing microscopic to macroscopic phenomena. In the microscopic realm, material informatics methods can be used to search for candidate materials, while computational scientific approaches can elucidate the mechanisms of their properties. In the macroscopic realm, we perform fluid analysis, structural analysis, and chemical process simulation to design production processes or facilities.

We are now promoting digitalized development that combines statistical methods with model approaches based on chemical and physical principles.



Microfluidic systems

To drastically reduce energy consumption, we are conducting R&D in collaboration with various universities by applying our technologies. One such technology is microfluidic systems. A microfluidic system allows the mixing, reaction, and purification of substances in channels of several hundred micrometers on a substrate. Massive parallelization of more than 10,000 substrates, which can be made using the manufacturing methods we have already established in this field of research, will lead to the realization of mass-produced microfluidic chemical plants. Furthermore, these systems will realize the Revolutionary Desktop Chemical Plant, which is capable of variable-volume production while saving space, energy, and resources.

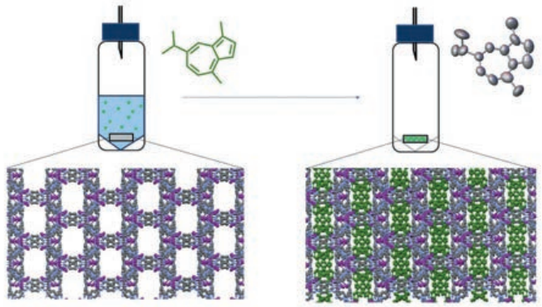


Microfluidic systems

Crystalline sponge method

While X-ray analysis is the most accurate method for determining the absolute structure of molecules, it requires a single-crystal specimen. In particular, it is extremely difficult for X-ray analysis to analyze a small amount of specimen. This is referred to as the "100-year-old problem of X-ray analysis." The crystalline sponge method, which can solve this problem, is a groundbreaking innovative technology by which, when the component is impregnated in a countless number of holes each having a diameter of approx. 1 nm arranged in a lattice pattern, the molecules are neatly arranged in the lattice, and X-ray analysis on the order of 1 μg (one-millionth of 1 g), which is one-thousandth that of the conventional weight, becomes possible.

Having acquired the crystalline sponge method at the University of Tokyo and implemented the technology within our company, we aim to enhance the quality and functions of next-generation materials.



New production method for cellulose derivatives

While cellulose acetate is biodegradable and environmentally friendly, the current production method has the issues of high energy consumption and high environmental load.
The continuous synthesis method, which we are developing in cooperation with Kanazawa University, is a technology for completing the series of processes from cellulose dissolution to reaction in a short time. This economical, environmentally-oriented new production method is expected to contribute to carbon offsets and energy offsets as well as the realization of a circular society, with the ultimate goal of achieving a sustainable society.

Engineering and Intellectual Property

Appearance inspection automation technology

In an appearance inspection conducted by the human eye, while the inspector may flexibly identify various abnormalities by leveraging his or her excellent senses (hearing and sight), it is not possible to completely eliminate variation in judgment and failures to detect abnormalities due to individual differences, physical/mental condition, and degree of inspection expertise. We have achieved automation of appearance inspections by leveraging the latest image diagnosis technologies, including imaging cameras and AI, and by developing our own algorithms. With the benefits of strengthening manufacturing quality and eliminating the need for inspectors, we offer products that customers can use safely and securely.

Appearance inspection machine

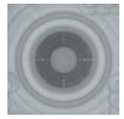
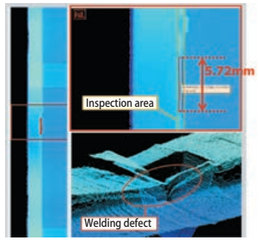


Image of a lens

Image of a label



Defect judgment image

Topics Collaboration with external parties

We are advancing our research and technologies by collaborating with external parties through comprehensive partnership agreements with various universities, joint studies, and human resource exchanges.

Within the group, we are particularly proactive in exchanges with Polyplastics Co., Ltd. to mutually utilize R&D resources and to maximize group synergy.

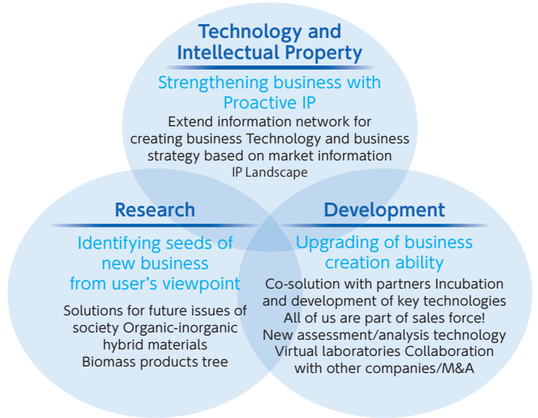
Proactive IP

In the Intellectual Property Center, under the slogan of "Proactive IP" and as clarified in Daicel's "Accelerate 2025" Mid-term Management Strategy, we promote innovations that lead to new business creation along with our researchers. In particular, we use the "IP Landscape" method to analyze the business environment, competitors, and future forecast as well as use it as a compass for management, business, and R&D.

In 2018, our intellectual property activities received two awards:

1) The Commissioner of the Patent Office Awards at the "Intellectual Property Achievement Awards" organized by the Japan Patent Office of the Ministry of Economy, Trade and Industry; and
2) The 15th Industrial Achievement Award from the Intellectual Property Association of Japan.

Furthermore, President Yoshimi Ogawa and the Commissioner of the Japan Patent Office held high-level talks in 2021 and 2022. We are making daily efforts to contribute to strengthening Daicel's businesses.



Access