

March 1, 2024

Menicon Co., Ltd.

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**Announcement of the establishment of Menicon × Tohoku University Co-creation
Research Center for Miru Mirai**

Menicon Co., Ltd. (Nagoya City, Aichi Prefecture; President and COO: Koji Kawaura; hereinafter referred to as “Menicon”) announces that Menicon and Tohoku University (Sendai City, Miyagi Prefecture; President: Hideo Ohno; hereinafter referred to as “Tohoku University”) will establish the Menicon × Tohoku University Co-creation Research Center for Miru Mirai (hereinafter referred to as “Co-creation Research Center”)*1 on the Aobayama Campus of Tohoku University in April 2024. Menicon will aim to create the new vision of “Miru” with Tohoku University by promoting research activities through industry–academia collaboration with the Co-creation Research Center and NanoTerasu functioning as hubs to realize ideal contact lens products and build an environment-conscious contact lens distribution system. For details, please refer to the followings.

*1 Co-creation Research Center: Part of the system operated by Tohoku University, this academia–industry collaboration center is located on the university campus, enabling cross-departmental access to university teachers, findings, and facilities so as to drive a variety of collaborative activities, including planning and promotion of joint research, human resource development, and collaboration with university start-ups.

Website of the Head Office of Enterprise Partnerships, Tohoku University (Co-creation Research Center):https://www.rpip.tohoku.ac.jp/jp/information/kyoso_kenkyu/

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News Release



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Announcement of the establishment of Menicon × Tohoku University Co-creation Research Center for Miru Mirai



Tohoku University (Sendai City, Miyagi Prefecture; President: Hideo Ohno) and Menicon Co., Ltd. (Nagoya City, Aichi Prefecture; President and COO: Koji Kawaura; hereinafter referred to as “Menicon”) will establish the Menicon × Tohoku University Co-creation Research Center for Miru Mirai (hereinafter referred to as “Co-creation Research Center”)^(Note 1) on the Aobayama Campus of Tohoku University in April 2024.

Menicon will aim to create the new vision of “Miru” with Tohoku University by promoting research activities through industry–academia collaboration with the Co-creation Research Center and NanoTerasu functioning as hubs to realize ideal contact lens and build an environment-conscious contact lens distribution system.

Background of the establishment

In the contact lens market, the distribution ratio of disposable lenses is gradually increasing, causing a significant increase in the amount of plastic used for lens manufacturing and distribution.

Under such circumstances, Tohoku University established the Research Center for Green X-Tech^(Note 2) in January 2023 as part of the Green Goals Initiative to initiate studies related to plastic recycling, including the creation of a database on recyclable plastic and

the construction of a plastic circular economy system.^(Note 3)

Meanwhile, Menicon has strived to elucidate the questions around contact lenses and their materials from scientific viewpoints by utilizing quantum beam sources at various facilities, including X-ray sources at SPring-8^(Note 4) and the Aichi Synchrotron Radiation Center^(Note 5) and neutron sources at the Japan Proton Accelerator Research Complex.^(Note 6)

⁶⁾ Menicon's group company in Singapore is recycling part of the plastic waste generated in the manufacturing process in order to create product cases and Menicon has pursued research on the recycling of plastic waste through participation in BRIDGE,^(Note 7) a national program led by the Ministry of the Environment. In February 2023, Menicon joined the Coalition^(Note 8) of NanoTerasu,^(Note 9) a next-generation synchrotron radiation facility under preparation for operation at Tohoku University.

As part of the Coalition initiatives, the two parties will establish the Menicon x Tohoku University Co-creation Research Center for Miru Mirai on April 1, 2024. We will make use of NanoTerasu, which is expected to provide excellent performance in the measurement of soft matter, such as contact lens materials, to promote precise actual measurement by complementary use of quantum beams and the construction of a digital twin based on computation using digital transformation, which enables precise material design.

NanoTerasu, which is expected to provide excellent performance in the measurement of "polymer materials", including contact lens materials, employs a high-intensity (bright) soft X-ray. Using this soft X-ray beam, we will gain a deeper understanding of the correlation between contact lenses and water, which is one of the major issues to be addressed to achieve comfort when wearing lenses.

Moreover, the construction of a digital twin for measurement and computation will be accelerated by not only performing the traditional analysis-based research but also by fusing the precise actual measurements via the complementary use of quantum beams with computational science utilizing digital transformation as two wheels to achieve precise material design.

Thus far, participation in the Coalition has enabled collaboration among various researchers from diverse fields and the establishment of the Research Center, and further progress is expected.

The amount of plastic containers used for the distribution of soft contact lenses is estimated to be approximately 40,000 tons per year. As the plastic material for contact lenses represented by these containers are primarily used in medical devices, they undergo strict inspection measures to ensure the use of raw materials of high purity.

In addition, BRIDGE research conducted under the jurisdiction of the Ministry of the Environment has confirmed that the recyclable plastic materials are extremely resistant to quality deterioration by heat, light, and pressure during production. Therefore, efficient recycling of these materials will help establish a closed recycling system, which is expected to help meet the recent demand for CO₂ reduction.

In collaboration with the Circular Economy System Construction project team of the Cross-ministerial Strategic Innovation Promotion Program (SIP) through BRIDGE, we will make further efforts to establish a closed recycling technology for plastics used in the process of contact lens manufacturing and distribution. At the same time, we will strive to build a society-wide environment-conscious contact lens distribution system by promoting circular economy activities that recycle contact lens containers on the market.

The establishment of the Co-creation Research Center is expected to accelerate the design of next-generation contact lens materials and aid in the construction of an environment-conscious contact lens distribution system.

Research in the Co-creation Research Center will be promoted based on the "joint research of Tohoku University, The University of Tokyo, and Menicon on the establishment of fundamental technology for contact lenses" announced today.

[Outline of the Co-creation Research Center]

1. Name: "Menicon x Tohoku University Co-creation Research Center for Miru Mirai"
2. Management system:
 - (1) General Manager: Eri Ito
(Director of the Menicon Future Device Laboratory, Menicon Co., Ltd.,

- Specially Appointed Professor of Tohoku University)
- (2) Support Manager: Tomonaga Okabe
(Professor of the Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University,
Director of the Research Center for Green X-Tech, Green Goals Initiative)
 3. Site: 3rd floor of the Hatchery Square, Aobayama Campus, Tohoku University
 4. Period: April 1, 2024 to March 31, 2027

[Notes]

Note 1. [Co-creation Research Center](#)

Part of the system operated by Tohoku University, this academia–industry collaboration center is located on the university campus, enabling cross-departmental access to university teachers, findings, and facilities so as to drive a variety of collaborative activities, including planning and promotion of joint research, human resource development, and collaboration with university start-ups. Website of the Head Office of Enterprise Partnerships, Tohoku University (Co-creation Research Center):https://www.rpip.tohoku.ac.jp/en/information/kyoso_kenkyu/

Note 2. [Research Center for Green X-Tech](#)

The Research Center for Green X-Tech is an industry–academia co-creation and innovation hub that aims to solve social issues and business challenges related to the field of green technology through practical research using combinations of advanced technologies, including science, engineering, data science, and IT.

Note 3. Cross-ministerial Strategic Innovation Promotion Program (SIP) Phase 3: Circular Economy System Construction

SIP is a national program created by the Cabinet Office’s Council for Science, Technology and Innovation (CSTI) to realize science and technology innovation. One of the projects in the program is the “Circular Economy System Construction,” currently in SIP Phase 3, which is led by the Ministry of the Environment. It is characterized by economic activities coupled with the conventional 3Rs (reduce, reuse, recycle), which reduce the amount of resource input and consumption, effectively use existing stock, and create added value by creating new services. The project aims to maximize the value of resources and products, minimize resource consumption, and reduce waste generation.

Note 4. [SPring-8 \(the world’s largest synchrotron radiation facility\)](#)

Located in Harima Science Garden City in Hyogo Prefecture and owned by RIKEN, the SPring-8 facility generates the world’s highest-performance synchrotron radiation—a narrow and extremely powerful light that is obtained when the direction of electrons accelerated to close to the speed of light is bent using electromagnets. At SPring-8, research in a wide range of fields, including nanotechnology, biotechnology, and their industrial applications, has been carried out using synchrotron radiation.

Note 5. [Aichi Synchrotron Radiation Center](#)

Managed by the Aichi Science & Technology Foundation, this synchrotron radiation facility commenced shared-use service on March 22, 2013 aiming to contribute to industrial development through its use by industry and academia as an advanced nanoscale measurement and analysis facility.

Note 6. [Japan Proton Accelerator Research Complex \(J-PARC\)](#)

This research complex promotes research to unravel the mysteries of the universe’s origin through studies that explore the origins of matter and life from the structure of atoms and molecules in substances, as well as studies that investigate elementary particles and atomic nuclei. In particular, at the Material and Life Science Experimental Facility (MLF), high-intensity pulsed neutrons and muons are used for leading-edge research and development in various fields for purposes ranging from scientific elucidation to industrial application.

Note 7. [BRIDGE](#)

A program in which the Cabinet Office’s Council for Science, Technology, and Innovation (CSTI) determines the “priority issues” based on science, technology, and innovation policy in order to guide innovative research and development measures of government ministries and agencies and drive initiatives, not only to promote research and development but also to solve social issues. The SIP Phase 3 “Circular Economy System Construction” is a project that aims to successfully create and expand an

innovation ecosystem to ASEAN and other countries.

Note 8. [Coalition](#)

A concept of a membership where members pay fees to join NanoTerasu and obtain the right to use the facility and receive services such as experiment and data analysis support from academic members.

Note 9. [NanoTerasu](#) (Official name: 3GeV High-brilliance Synchrotron Radiation Facility)

NanoTerasu is a synchrotron radiation facility presently under construction on the Aobayama Campus of Tohoku University. At NanoTerasu, ultra-bright synchrotron radiation produced by an electron accelerator is applied to substances to visualize the ultrafine nanometer-scale world. It is expected to visualize nanostructures such as polymers composed of light elements.

<Contact>

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