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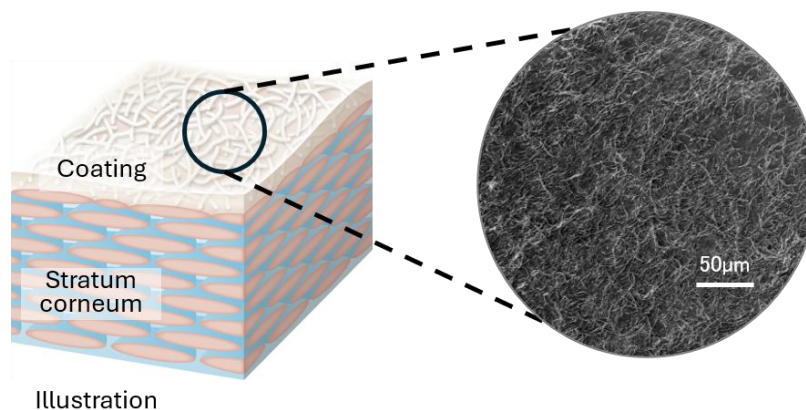
July 31, 2026

Development of Technology to Deliver Fine Fiber Functions in Skincare Formulations

A Simple Application Forms a Uniform, Highly Durable Coating That Retains the Formulation

Kao Corporation has developed, using cellulose microfibers*¹ based on Fine Fiber Technology*², a skincare formulation that achieves functions equivalent to those of a conventional fine fiber membrane. The cellulose microfibers incorporated in the formulation form a network structure characteristic of Fine Fiber Technology after application, producing a uniform coating. This coating demonstrates high resistance to sweat and sebum, exhibits high persistence, and suppresses transepidermal water loss (TEWL). Kao further confirmed that continued use increases moisture content in the stratum corneum.

This technology makes it possible to achieve the functions of a fine fiber membrane—which previously required combination with a skincare formulation—using a skincare formulation alone.



Network structure formed after application of the formulation containing the new material

Part of the findings of this research was presented at the 51st Convention of the Japanese Cosmetic Science Society (June 25–26, 2026, Tokyo).

*1 Short fibers with an average fiber diameter of 1 µm, developed by Asahi Kasei Corporation

*2 Kao News Release, November 27, 2018: [Kao Has Developed Fine Fiber Technology](#)

Background

In 2018, Kao developed Fine Fiber Technology, in which super-fine fibers of 1 µm or less in diameter are

sprayed directly onto the skin using a dedicated device, forming an ultra-thin membrane of overlapping fibers on the skin surface. It has been demonstrated that the membrane uniformly retains formulations through the high capillary forces of the super-fine fibers and suppresses TEWL*³. In recent years, in addition to the direct spray method, Kao has also developed a technology for forming fine fiber in sheet form, with a view to expanding applications and scope of use*⁴.

Both the spray type and the sheet type, however, require use in combination with a skincare formulation. Kao therefore undertook development to apply fine fiber to formulations, aiming for a more convenient format.

*3 Kao News Release, September 4, 2019: [Membrane formed by use of fine fibers with moisturizer formula has effects on protein expression in stratum corneum and efficacy for improving skin condition](#)

*4 Kao News Release, July 8, 2025: [Large Fine Fiber Sheets Integrated with Non-woven Fabric Developed](#)

New material based on fine fiber that can be incorporated into skincare formulations

To deliver the functions of fine fiber in a formulation, the super-fine fibers must be stably dispersed in the formulation and must form a network structure after application. However, it was difficult for existing super-fine fibers to achieve both of these requirements simultaneously.

Kao therefore began exploring materials and fiber structures capable of achieving both stable dispersion within a formulation and network formation after application. Focusing on cellulose fiber as a material that resists dissolution in water or oil within a formulation and is suited to the formation of a uniform coating, Kao conducted joint research with Asahi Kasei Corporation.

Asahi Kasei achieved fine cellulose fibers with an average fiber diameter of 1 μm through advanced spinning technology, and both companies jointly optimized parameters including fiber length. As a result, the optimal fiber geometry was identified—one that disperses stably within a formulation and forms the network structure characteristic of fine fiber after application (Figure 1).

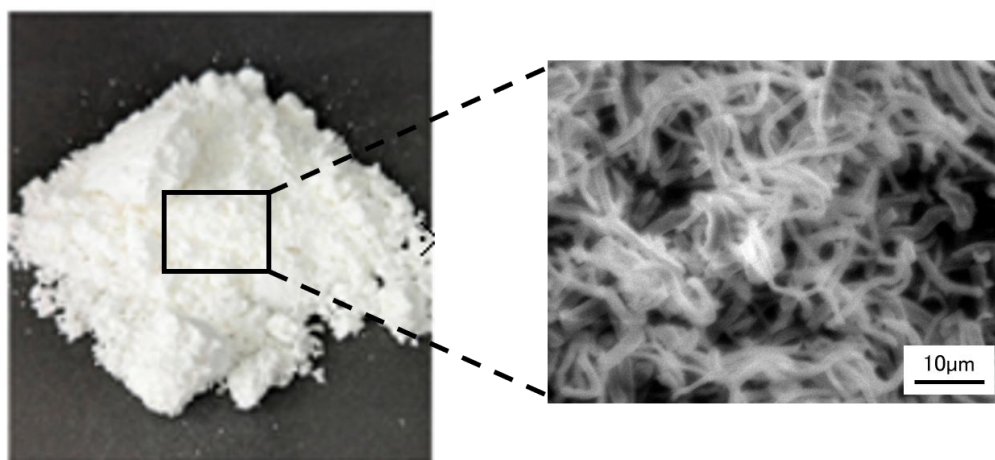


Figure 1. Cellulose microfibers optimized for incorporation into skincare formulations

Features of the formulation containing the new material

Formation of a uniform, persistent coating

The developed cellulose microfibers were incorporated into a skincare formulation, and the coating formed after application was observed by scanning electron microscopy. It was confirmed that the cellulose microfibers form a network structure.

Whereas conventional formulations tend to produce uneven coverage upon application, the formulation containing the new material was found to form a uniform coating. This coating also demonstrated high resistance to friction, sweat, and sebum, as well as high persistence.

Suppression of TEWL

In five Japanese women in their 20s to 50s, the formulation containing the new material and the formulation without it were applied to the left and right halves of the face respectively, and changes in TEWL over time were measured. The results confirmed that the formulation containing the new material showed lower TEWL at six hours after application compared with the formulation without it, indicating that water evaporation was suppressed (Figure 2). This effect is attributed to the uniform coating that covers the skin surface over an extended period.

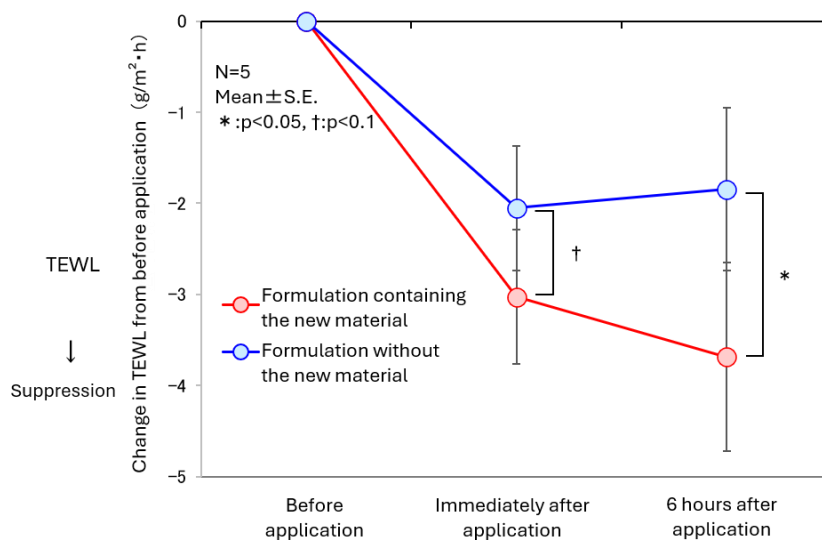


Figure 2. TEWL suppression effect of the formulation containing the new material

Increase in stratum corneum moisture content with continued use

In 11 Japanese men and women aged in their 20s to 40s, a treatment was first applied to temporarily impair the stratum corneum on the inner forearm, after which the formulation containing the new material and the formulation without it were each applied continuously for four days. A comparison of the change in conductance—an indicator of stratum corneum moisture content—showed that the site treated with the formulation containing the new material had higher conductance after four days, indicating an increase in stratum corneum moisture content (Figure 3).

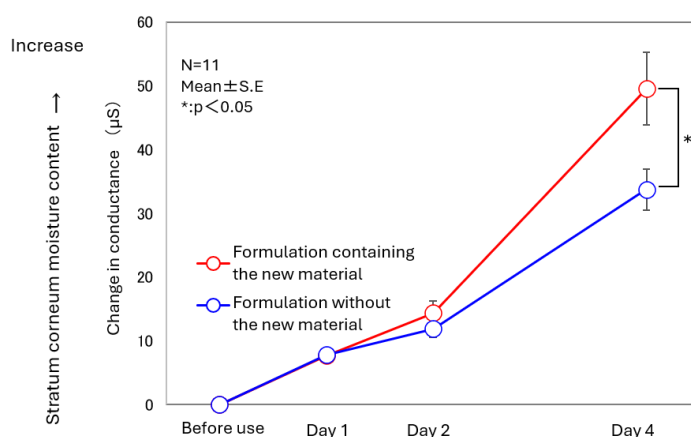


Figure 3. Change in stratum corneum moisture content with the formulation containing the new material

Summary

Using cellulose microfibers developed by Asahi Kasei, Kao has succeeded in achieving, with a skincare formulation alone, the functions of a fine fiber membrane that previously could only be obtained by combining such a membrane with a skincare formulation.

Kao will continue to work toward creating new value that addresses the skin concerns of consumers.

* This news release is a translation of a Japanese-language news release dated July 7, 2026.

About Kao

Kao, a Japan-based manufacturer of cosmetics, personal care and household products, as well as specialty chemicals, creates high-value-added products and services that provide care and enrichment for the life of all people and the planet. Through its brands such as *Curél*, *SENSAI*, and *MOLTON BROWN* cosmetics, *Bioré* and *Jergens* skin care products, *Oribe* hair care products, *Attack* laundry detergent, and *Laurier* sanitary products, Kao is part of the everyday lives of people across Asia, the Americas, Europe, the Middle East, and Africa. Combined with its chemical business, which contributes to a wide range of industries, Kao generates about 1,690 billion yen in annual sales. Kao employs about 31,500 people worldwide and has more than 130 years of history in innovation.

Please visit [the Kao Group website](#) for additional information.

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