

TAYCA CORPORATION gave a poster presentation at the 35th International Federation of Societies of Cosmetic Chemists (IFSCC) Cannes 2025.

At the 35th International Federation of Societies of Cosmetic Chemists (IFSCC) Cannes Congress 2025, a conference to present cutting-edge research on cosmetics held in Cannes, France from September 15th to 18th, 2025, our technology was selected and presented in the poster category out of a total of 798 research reports (68 oral presentations and 730 poster presentations).

【Research Contents Introduction】

1. Presentation title

「Development of a novel micro titanium dioxide with excellent dispersibility」

2. Background

Titanium dioxide is an essential ingredient in sunscreen products because it is highly safe and has excellent UV protection. In recent years, because of the demand for transparency, fine-particle titanium dioxide with small particle sizes have become mainstream. However, generally, as the particle size becomes smaller, the cohesive force tends to become stronger, and aggregated fine-particle titanium dioxide cannot provide a high UV protection effect.

In this study, we focused on the dispersion mechanism of fine-particle powder and established a new surface treatment technology that suppresses particle aggregation that occurs during the production process to improve dispersibility.

3. Research content

Rutile-type fine-particle titanium dioxide was treated with a combination of aluminum hydroxide and fatty acid in water. Furthermore, before the drying, surfactant and oil were mixed to replace some of the hydration water, and then dried to obtain the developed product. Dispersibility and UV protection effect were evaluated using an isododecane solution with a solid content of 7%, the dispersion state was observed with an optical microscope, and the transmittance curve was measured with a spectrophotometer. In order to clarify the differences, the dispersion was prepared under weak conditions of 500 rpm for 10 minutes with a dispersing mixer.

In optical microscope images of the dispersion, many aggregated particles of fine-particle titanium dioxide were found in the conventional product (treated with only aluminum hydroxide and fatty acid), but there were almost no aggregated particles in the developed product, confirming its excellent dispersibility (Fig.1). Furthermore, the transmittance curves show that the developed product has low transmittance across the entire ultraviolet light range, especially in the UV-B range (280-320 nm), confirming that the developed product, with its excellent dispersibility, fully exhibits the UV-B blocking effect that is characteristic of fine particle titanium dioxide (Fig.2).

We reviewed the production process of fine-particle titanium dioxide and mixed a surfactant and oil before drying, which suppressed the aggregation that occurs during drying and improved wettability to the medium. This developed product can achieve a very high dispersion effect even with a weak dispersion force, making it possible to easily produce high-quality sunscreen products without having to choose dispersion equipment. This technology is expected to lead to reduced energy consumption and CO₂ emissions when producing sunscreen products, and we will continue to improve the technology and contribute to protecting the global environment.

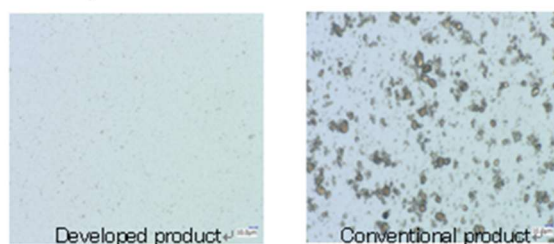


Fig.1 Optical micrograph of each dispersion.

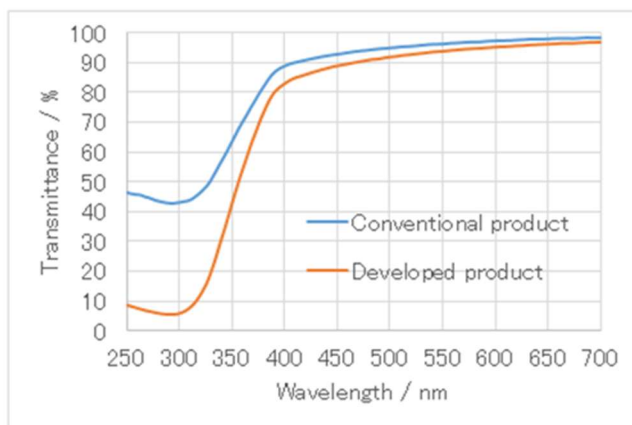


Fig.2 Transmittance curve of each dispersion.

Presenter Profile

Kazunori Yagi

TAYCA CORPORATION

Okayama Research Laboratory

— Biography —

1999 Completed from the Graduate School of Natural Science and Technology, Okayama University, Division of Molecular Sciences.

Joined TAYCA corporation and was assigned to the Okayama Research Laboratory.

Specializes in the development of inorganic UV scattering agents, spherical silica for texture improvers and surface treatments.

About IFSCC (International Federation of Societies of Cosmetic Chemists)

IFSCC (The International Federation of Societies of Cosmetic Chemists) was founded in 1959 and currently has 81 member countries and regions, with a total membership of approximately 16,000. The annual academic conference is one of the most prestigious forums for presenting research, where cosmetic engineers from all over the world present their latest research results.