

TAYCA CORPORATION has been selected in the top 10 for the second consecutive year at the 34th International Federation of Societies of Cosmetic Chemists (IFSCC) Iguazu Congress 2024.

At the 34th International Federation of Cosmetic Chemists Iguazu Congress 2024, a global competition for cosmetics technology held in Iguazu Falls, Brazil from October 14th to 17th, 2024, our company's researcher Toru Tanaka was recognized for his technology in the basic oral presentation category out of a total of 688 research reports (83 oral presentations and 605 poster presentations), and TAYCA CORPORATION was selected in the top 10 for the second year in a row.

【Research Contents Introduction】

1. Presentation title

Novel Multifunctional SPF Booster by Advanced Disperse Technology: Spherical Silica Encapsulating Dispersed Titanium dioxide for Mineral Sunscreen with Excellent UV protection

2. Background

Inorganic materials such as Titanium dioxide (TiO₂) and Zinc Oxide (ZnO) are safe, protect the skin against ultraviolet (UV) rays, and have low environmental impacts. Hence, the demand for mineral sunscreens with excellent UV protection is increasing worldwide. However, enhancing the sun protection factor (SPF) by using large amounts of these inorganic materials in the formulation may leave the skin to appear white with an unsatisfactory texture and transparency. To solve these problems, a raw material that can achieve an excellent UV protection effect with small amounts of UV scattering agent is required. Combining our proprietary spherical silica (SiO₂) synthesis technology with TiO₂. This spherical SiO₂ enables us to reduce the amount of UV scattering agents in mineral sunscreen and simultaneously has high SPF, pleasant texture, and satisfactory transparency.

3. Research content

We have succeeded in developing a novel multi-functional SPF booster TiO_2 encapsulating SiO_2 SCAP-T (Spherical Silica encapsulating TiO_2) by encapsulating TiO_2 in SS (Spherical Silica) particles. In addition, by improving the dispersion state of TiO_2 , we found that the boost effect of the developed product SCAP-dT (SCAP-dispersed TiO_2) was significantly improved compared to the conventional product SCAP-aggT (SCAP-aggregated TiO_2) (Fig. 1).

In vivo test of a W/O mineral sunscreen containing 5% SCAP-dT and 23% ZnO demonstrated an SPF of 51 and a UVAPF of 18, demonstrating a significantly higher UV protection effect than a formulation containing SS. These results indicate that SCAP-dT supplementally diffuses UV rays and effectively enhances the UV protection of ZnO (Fig. 2).

With SCAP-dT, we could reduce the amount of ZnO required to achieve a high SPF mineral sunscreen from 30% to 23%, allowing simultaneous satisfactory transparency and pleasant texture while maintaining a high SPF. Furthermore, because this material provides a smooth texture like spherical silica, it can also be used as an alternative raw material to microplastic beads, which are one of the causes of marine pollution. We will continue to utilize this material technology to contribute to reducing the burden on people and the global environment.

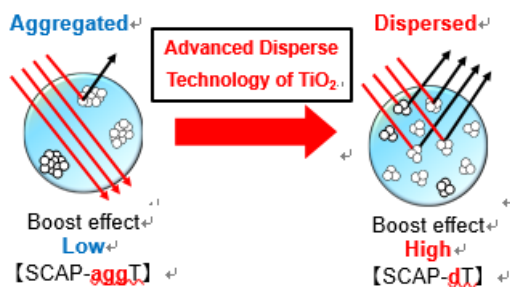


Fig. 1 The dispersion state of TiO_2 and SPF boost effect.

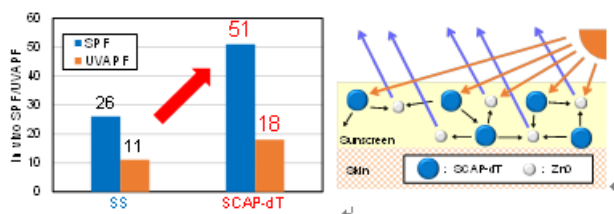


Fig. 2 About mineral sunscreen.
(Left) Results of *in vivo* SPF, (Right) Boost Mechanism.

Presenter Profile

Toru Tanaka

TAYCA CORPORATION

Okayama Research Laboratory

– Biography –

2016 Completed from the Graduate School of Engineering, Kyoto University,
Department of Energy and Hydrocarbon Chemistry

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.