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Abstracts

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Basic knowledge on cosmetic dermatitis and its future aspects

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Common cosmetic dermatitis is composed of mainly chronic irritant contact dermatitis, allergic contact dermatitis and pigmented cosmetic dermatitis. Special types include atopic contact dermatitis due to cosmetics, complication of corticosteroid dermatosis, and eyelid dermatitis. Common cosmetic sensitizers are various fragrances, pigments and base components. The best treatment to stop the recrudescence of cosmetic dermatitis is to perform patch testing to discover causative allergens for the patients, so that allergen control becomes possible later. It has been the only effective method to perfectly cure the disastrous pigmented cosmetic dermatitis with Mongoloids in the past. The avoidance of very allergenic fragrances (class A fragrances in the table) and two pigments, D&C Red No.31 and Yellow No.11 is essential to reduce cosmetic dermatitis of the consumers. The introduction of guidelines to avoid strong sensitizers is recommended. Recently, eyelid dermatitis due to allergy or irritation has been common and rubbing itchy eyelids has led to blindness due to retinal abrasion. Adding various plant components seemed to have increased the irritation, and it is better to be avoided hereafter.

Shear viscosity of concentrated spherical silica suspension – effect of polymethylsiloxane surface treatment

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In determining the formulation of cosmetics dispersed in powder, it is very important to discover the rheological behavior of the suspension. In the case of concentrated particle suspension, it is known that the remarkable behavior of the rheology, which is different from the dilution system, is shown in ways such as shear thickening. In this report, the rheological behaviors of a concentrated spherical silica particle system were investigated in terms of particle–particle and particle–medium interaction. In the case of an aqueous medium, shear thickening occurred under certain conditions. It is noteworthy that the pH of an aqueous medium far from the isoelectric point (pH 4) of silica particles resulted in a decrease in shear viscosity η due to an increase in the double-layer repulsion. In addition, the rheological behaviors of suspension using the silica particles, which were treated with polydimethylsiloxane and methylhydrogen polysiloxane as the solvent system, were investigated. Shear thickening disappeared in all of the solvent systems, and polydimethylsiloxane system showed lower viscosity than the methylhydrogen polysiloxane system. The surface treatment, which affects the shear viscosity, is changed not only by the particle–particle interaction but also the particle–medium interaction.

Polymerization of a water-swellable microgel by a novel inverse microemulsion polymerization and its application as a viscosity thickener for cosmetics

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A water-swellable microgel was polymerized in the inverse micelle of a nonionic surfactant, namely a confined space. The microgel was polymerized using 2-acrylamido-2-methylpropanesulfonic acid, dimethyl-acrylamide, and methylene-bis-acrylamide. To determine a suitable polymerization system that appeared W/O microemulsion at around 65 degrees, the phase diagram of the pseudo-ternary system was studied. The microgel polymerized in the system was isolated by a reprecipitating method; consequently the samples were obtained as powder. The rheological properties of

the microgel were studied after re-dispersing the powder sample in an aqueous medium. The viscosity-thickening effect of the cross-linked microgel was higher than that of the non-crosslinked sample. Moreover, a suitable crosslinking ratio was confirmed. The viscosity thickening effects of the microgel under various pH, salt concentration, and alcohol concentration conditions were also investigated. The study revealed that the microgel can be considered as a multi-purpose viscosity thickener for cosmetics.

The preparation of visible emulsions and its applications to cosmetics

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We developed a preparation method for visible emulsion droplets (0.05–3 mm) consisting of a solid type oil and a liquid type oil. It was found that (1) using amphiphiles as the solid oil gave a spherical and visible sized particle and (2) behenyl alcohol was the most preferable amphiphile to make a large sized particle. DSC measurement and microscopic observation of the particle showed that the amphiphilic solid oil built a shell on the outer side of the particle and the shell protected the emulsion against aggregation and coalescence. It was found that the preparation of an extremely large emulsion could create innovative functions in the cosmetic field. The visible sized emulsion could provide a freshening feel in the early stages of the application and an emollient feel after rubbing into the skin. Furthermore, since this emulsion could protect an unstable lipophilic material from hydrolysis, it offers a suitable storage for useful cosmetic ingredients such as lipophilic drugs and hydrophobic powders.

