Special Issue "Recent Advances in Hair Science and Hair Care Technologies"

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Scalp hair is very important for men and women especially in terms of fashion and appearance. However, hair is exposed to a harsh environment and continuously damaged by chemical treatments, heat and weathering. Furthermore, consumers have many concerns in regards to their hair care, such as hairstyle, hair color dullness and fading, how to choose from the many types of hair shampoo, and various types of hair damage. Hair scientists have been making an effort to resolve such problems.

Recent progress in hair science and technology has been remarkable and amazing, and these topics have brought evolutions and developments in hair care technology and products. Furthermore, I hope and believe they could support and help people's lives. Therefore, it is important to have a special issue in the journal *Cosmetics* containing these new technologies and useful discoveries. This special issue covers many topics on hair, from basic hair science to applications, such as micro structure analysis, hair damage and its repair, and new and special formulations.

Some articles discuss hair structure. Until now, hair structure has been analyzed and reported mainly by microscopic observation. My friend, George E. Rogers, is one of the great researchers in hair and wool science, and his achievements and contributions have been great and exciting from the 1950s. In this issue, he focused on the cuticle and reviewed what is known and unknown up until now [3]. This review, a kind of history of the research, will be very useful for future work. Shinobu Nagase reviewed the relationship between hair appearance and hair structure [5]. He concluded that the important factors for hair appearance are the alignment of multiple hair fibers, appropriate cross-sectional shape, ordered scaly structure, and pore-less internal structure. Some authors mentioned not only analysis and discovery, but also useful technology. For example, Mikako Ezure et al. discussed [6] not only beautiful hair structure, but also how the hair becomes beautiful. Shinichi Tokunaga et al. described [7] the role of 18-methyleicosanoic acid (18-MEA) for hair appearance and smoothness, as well as repairing technology for damaged hair using 18-MEA. There are also some papers on the physical properties of hair. Takahashi mentioned [2] the interesting macro properties of hair from mixed races and, furthermore, the features of damaged hair. Yusuke Ezawa et al. [4] investigated hair bending elasticity and the stiffness of the fibers, and reported that the hair bending modulus depends on the fractions of the constitutional cortical cell types. It was determined that there is a difference in stiffness between para- and ortho-like cortical cells in the transverse sections of hair, measured by atomic force microscopy nanoindentation. Some authors reported on a new formulation and concept of shampoo and conditioner. Pamela Agredo et al. [8] investigated and reported on hair care formulations that use cationic surfactants. Several oil-in-water emulsion prototypes were evaluated for their potential use in hair conditioners. Jennifer Gubitosa et al. reviewed shampoos [1]. Tyey remarked that shampoo is considered not only as a cosmetic product with a purifying purpose, but is also responsible for maintaining the health and the beauty of hair. For this purpose, a new concept is needed. He proposed a new type of a solid shampoo using clay and herbs.

Thus, many friends and colleagues of mine have contributed to this issue. Therefore, I am very honored and proud to be an editor and I am very grateful for their great contribution.

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