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〈シンポジウム I〉

『観る。生体・香粧品を見る，捉える。』

香粧品を観る電子の目

山下美香

Observation of Cosmetics through the Eyes of Electron

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Abstract

Electron microscope (EM) is a very useful tool for observing the microstructure of cosmetics. The two basic types of EM are the scanning electron microscope (SEM) and the transmission electron microscope (TEM). SEM provides three-dimensional images of the surface feature of samples, whereas TEM images illustrate the internal structure of them. Both EM have advantages and disadvantages, and the instrument used should be chosen depending on the observation object. In the case of observing a liposome, for example, TEM, cryo-SEM, TEM-tomography and phase-TEM can illustrate the fine structure of multilamellar vesicle. We found the combination of cryomicrotome and cryo-SEM techniques was the most effective in observing the self-organization process of phospholipids to form liposomes. The cryo-SEM micrographs showed that a multilamellar stack of the phospholipid bilayers formed immediately in contact with water and then a multilamellar started rolling up to form a vesicular structure. Furthermore the cryo-SEM technique provided the fine network structure of aqueous polymers in water, only by using the metal-contact method to prepare the specimen. For analyzing the state of cosmetic products on the skin, we observed the cosmetic layer, using SEM by applying a stripping agent to the skin. Stripped films of a makeup foundation layer on the skin, which were applied by a makeup artist and a consumer, were not identical. The makeup artist had made more continuous and homogeneous layer of the makeup foundation, than that of the consumer.

Key words: TEM, SEM, liposome, aqueous polymer, cosmetic layer.