

# Analysis of sunscreen products by ionRocket-DART<sup>®</sup>-MS

【Keyword】 Sunscreen products, Raw materials, Silicone, Polymer, GPC, ionRocket, DART<sup>®</sup>-MS  
 【Subject area】 Cosmetics, Research and Development, Quality control

## ■ Abstract

Sunscreen products have been under constant development to optimize their UV cutting, water resistance, and usability. Silicone based surfactants and film-forming agents are typically used as a base. In order to analyze these agents, GC-MS (Gas Chromatograph-Mass Spectrometry) or GPC (Gel Permeation Chromatography) are often used. But these analysis methods require pre-treatment matched to each sample type.

In this application, we utilized ionRocket DART<sup>®</sup>-MS analysis without any pre-treatment. We detected silicone based cosmetic raw material, directly.

## ■ Sample

Sunscreen product (commercial products)

## ■ Method

2  $\mu\text{L}$  of a sunscreen product was placed into the ionRocket copper sample pot. A temperature gradient of 100  $^{\circ}\text{C}/\text{min}$ . from room temperature to 600  $^{\circ}\text{C}$  was applied. Total run time was 7 min.

## ■ Result

TIC, MS spectra measured at 100  $^{\circ}\text{C}$  to 300  $^{\circ}\text{C}$  and 300  $^{\circ}\text{C}$  to 500  $^{\circ}\text{C}$  are shown in Figure 1.

In MS spectrum acquired at 100  $^{\circ}\text{C}$  to 300  $^{\circ}\text{C}$ , Polyoxyethylene (POE) modified silicone surfactant was observed. In the MS spectrum acquired at 300  $^{\circ}\text{C}$  to 500  $^{\circ}\text{C}$ , silicone based film-forming agent was observed.

ionRocket DART<sup>®</sup>-MS can analyze silicone based cosmetic raw materials easily and directly, and should prove useful for stability evaluation and quality control of mixture materials such as cosmetics.

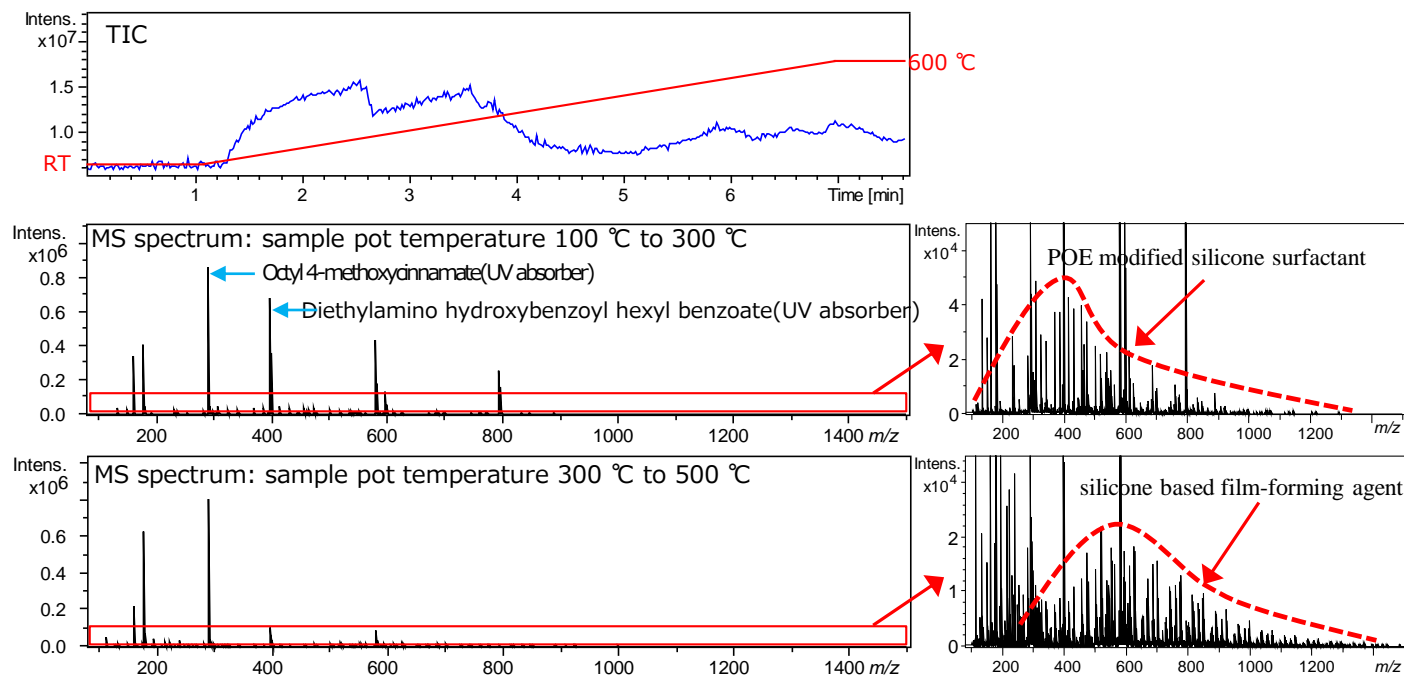


Figure 1. Analysis results of sunscreen product