Real time analysis of scent release from perfume

BN16-0417

BACKGROUND Perfumes have been used for millennia to give a pleasant fragrance. The exact composition of the scent changes over time, beginning immediately after application. The location of application, for example the chest as opposed to the ankle, can also change the perceived fragrance. This difference could be caused by a difference of skin temperature.

In this application note, the Volatimeship DART®-MS system was used to measure the time-dependent change of the scent of a perfume in real time. Scent release was measured at both 27°C and 33°C to assess differences caused by changes in temperature.

SAMPLE Perfume (Eau de cologne)

METHOD The analysis system is shown in Figure 2. Paper was placed on a heater set at 27°C (Ankle temp.) or 33°C (Chest temp.). The assay process was extremely simple:

1. Perfume was pipetted onto a paper substrate.
2. Volatile compounds released from the paper were introduced continuously into the DART® gas stream by Volatimeship.
3. Volatile compounds were detected by MS.

RESULTS An MS spectrum and time-dependent changes in the measured species released at 33°C are shown in Figure 3. In Fig. 4 the scent release behaviors are classified into two groups:

1. Detected immediately (e.g., Linalool)
2. Detected ten minutes later (e.g., Limonene)

showing that the top and middle notes were measured by this system.

Scent release behavior at both 27°C and 33°C is shown in Figure 5. At 33°C, the intensity of linalool was higher and decayed more rapidly than at 27°C The rise time of limonene at 33°C was earlier than at 27°C. This result indicates how scent release behavior could be influenced by skin temperature.

By using this analytical method scent release from perfume can be measured in real time. Additionally, sampling occurs in an open, unrestricted space. This allows monitoring of volatile compounds in situations which would be difficult to achieve with other systems, for example, directly after applying or rubbing perfume on skin, or adjacent to foods as they cook.

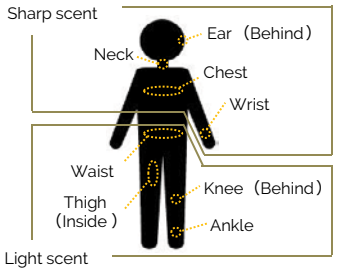

Figure 1. Common perfume locations

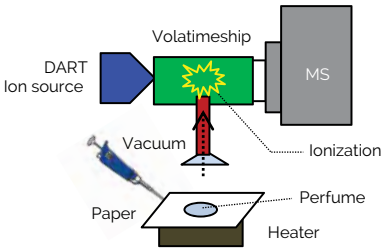

Figure 2. Configuration

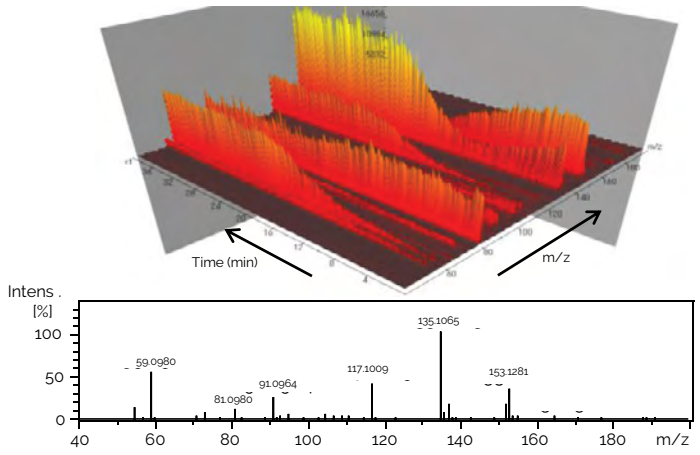

Figure 3. Results measured at 33°C (Upper) Time-dependent change (Lower) Mass spectrum

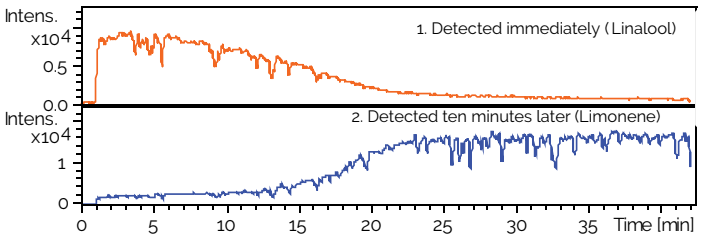

Figure 4. Two patterns of scent release

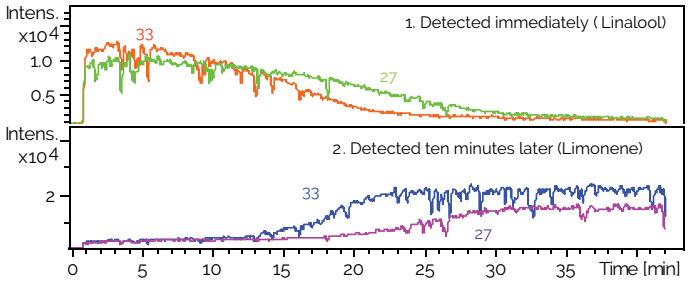

Figure 5. Temperature based differences in scent release

TARGET Perfume | Scent | Top Note | Middle Note

BioChromato
www.biochromato.com info@biochromato.com

Volatimeship