

## Dynamic Headspace Analysis of Fragrance Products

Personal fragrance products are complex blends of natural and synthetic materials carefully formulated to produce a characteristic aroma. The ability to study these blends by techniques such as gas chromatography is important in assuring that the product profile does not shift when making new batches, and in comparing different applications of the same fragrance or in studying competitor products and imitators.

Fragrances are frequently marketed with the help of microencapsulated strips placed in publications, and it is essential that the test strip smell just like the actual product to attract customers. Figure 1 shows the volatiles collected onto a Tenax trap from a 3 x 20 mm section of a magazine fragrance strip, which was placed into the glass thermal desorption tube of a CDS Analytical Model 6000 sample concentrator. The strip was warmed to 80°C and purged with helium to carry the volatile compounds to the trap, which was then backflushed and heated to transfer the compounds to the GC. For comparison, a sample of the actual fragrance was placed onto a piece of blotter paper and treated the same way, producing Figure 2. In this case, the aroma compounds presented by opening the strip match quite well with the profile seen for the actual perfume. The result was a sample strip which had a fragrance representing the actual product very effectively.

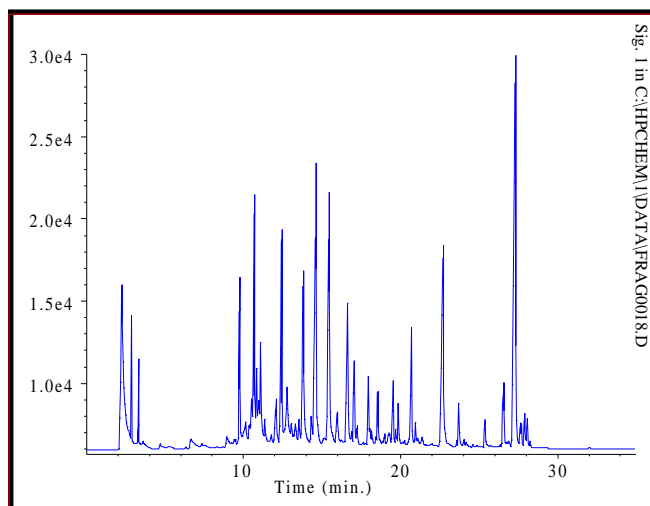


Figure 1. Dynamic headspace of fragrance test strip from magazine ad.

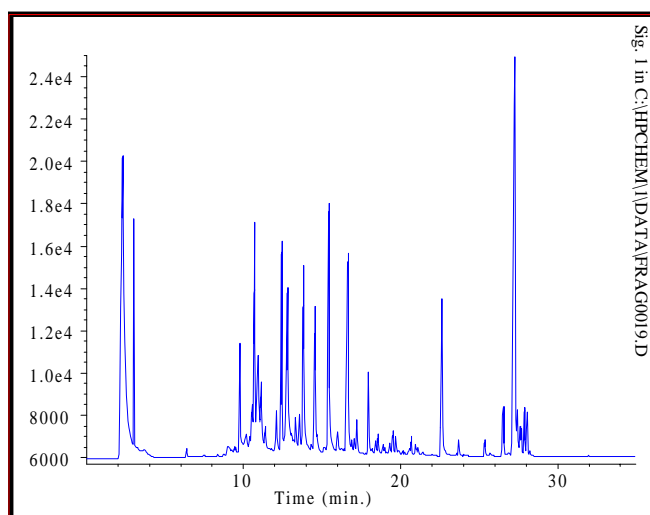


Figure 2. Actual fragrance product sampled by dynamic headspace.

## Equipment

Samples were analyzed using a CDS Model 6000 Sample Concentrator interfaced to a Hewlett-Packard 5890 gas chromatograph with a flame ionization detector.

## Thermal Desorption

Valve oven: 200°C  
Transfer line: 200°C  
Sample Temperature: 80°C  
Time: 10 minutes  
Sample carrier: Helium, 30 ml/min.  
Trap desorption: 250°C for 2 minutes  
Trap bake: 290°C for 5 min.

## Chromatography

Carrier: He  
Column: SE-54  
30 m x 0.53 mm  
Splitless  
Initial temperature: 40°C for 2 minutes  
Ramp: 8°C/minute  
Final temperature: 250°C for 2 minutes

FOR MORE INFORMATION  
CONCERNING THIS APPLICATION,  
WE RECOMMEND THE  
FOLLOWING READING:

T. Wampler, W. Bowe, E. Levy,  
*Splitless Capillary GC Analysis of  
Herbs and Spices*, Al. Lab., October,  
1985.

Techniques for Analyzing Food  
Aroma, R. Marsili (Ed.), Marcel  
Dekker, N.Y., publisher.

T. Wampler, W. Bowe, E. Levy,  
*Dynamic Headspace Analysis of  
Residual Volatiles in Pharmaceuti-  
cals*, J. Chrom. Sci., 23 (1985) 64.

Additional literature on this and  
related applications may be obtained  
by contacting your local CDS Analyti-  
cal representative, or directly from  
CDS at the address below.



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