Identification of Flavor Components in Perfumes by Headspace Solid Phase Microextraction and Gas Chromatography-Mass Spectrometry

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Background information

The main objective of this experiment is the identification of flavor components in *4711 Original Eau de Cologne* perfume by headspace solid phase microextraction (HS/SPME) followed by gas chromatography–mass spectrometry (GC/MS) with electron impact ionization.

In this experiment the students are provided with a mixture of unknown flavor substances. They learn to handle a new solvent-free sample preparation technique such as solid phase microextraction (SPME), to separate and to identify the compounds, and to write down the most important fragmentation reactions. The students get experience in the technique of GC/MS and in the identification methods by search of the *NIST 98 MS Library* and by comparison with pure standards. The second year chemistry students are able to complete this experiment in a single four-hour laboratory session.

Materials

- Ethanol (96%, extra pure), CAS [64-17-5]
- Pure standards of: • -pinene CAS [80-56-8], • -pinene CAS [127-91-3], D-limonene CAS [5989-27-5], 1,8-cineole CAS [470-82-6], linalool CAS [78-70-6], linalyl acetate CAS [115-95-7], • -terpinene CAS [99-85-4], cis-pinane-2-ol CAS [4948-29-2], (+)- -terpineol CAS [7785-53-7], cis-citral CAS [106-26-3], cis-geraniol CAS [106-25-2], neryl acetate CAS [141-12-8] and nopyl acetate CAS [128-51-8] (when