



SIM

Olfactory Detector (OFD)



GC-OLFACTOMETRY (GC-O)

GC-O is a separation technique combining the high resolution of capillary GC with the highly sensitive human nose as detector. This is one of the **most effective analysis methods** for flavoring and fragrance industries because the human nose is often more sensitive than any physical detector.



Applications:

- flavors and odorants in cosmetics and food
- smelly components in environmental analysis and waste control
- off-odor detection in chemical and plastics industries



SIM Olfactory Detector (OFD)

After GC separation, the OFD is used to record odor association of an eluted substance and its intensity in function of time. A capillary transfers the eluate of the GC column from the oven to the “sniffing port”. This is a glass cone at the outside end of the capillary, where the tester can “sniff” the olfactory impressions of the compounds.

Developing the SIM OFD (also called “Sniffer”), a high value was set on the following prerequisite conditions that allow optimal and interference-free interpretation of the olfactory impressions:

- **Absolutely olfactory neutrality** of all used components so that the olfactory perception of the eluted substances is not disturbed: The **transfer capillary** is inside a heatable stainless steel tube. The white insulating hose at the outside of the transfer line is odorless even at high temperatures (no polymers!).
- **Heatable transfer line without „cold spots“** for the correct sniffing of high boiling compounds: A heating element all along the stainless steel enables heating up to **300 °C**. The heating temperature is controlled by the chromatography software.
- **Comfortable working position** is enabled by the sniffing port which is vertically adjustable to individual requirements: Due to the ergonomic sitting position, the tester can fully focus on the sensory perception.



- **Humidified air** (see water bottle sitting above the sniffing port holder) is mixed into the glass cone to prevent the nasal mucosa from drying out. For this also an odorless tube is used.

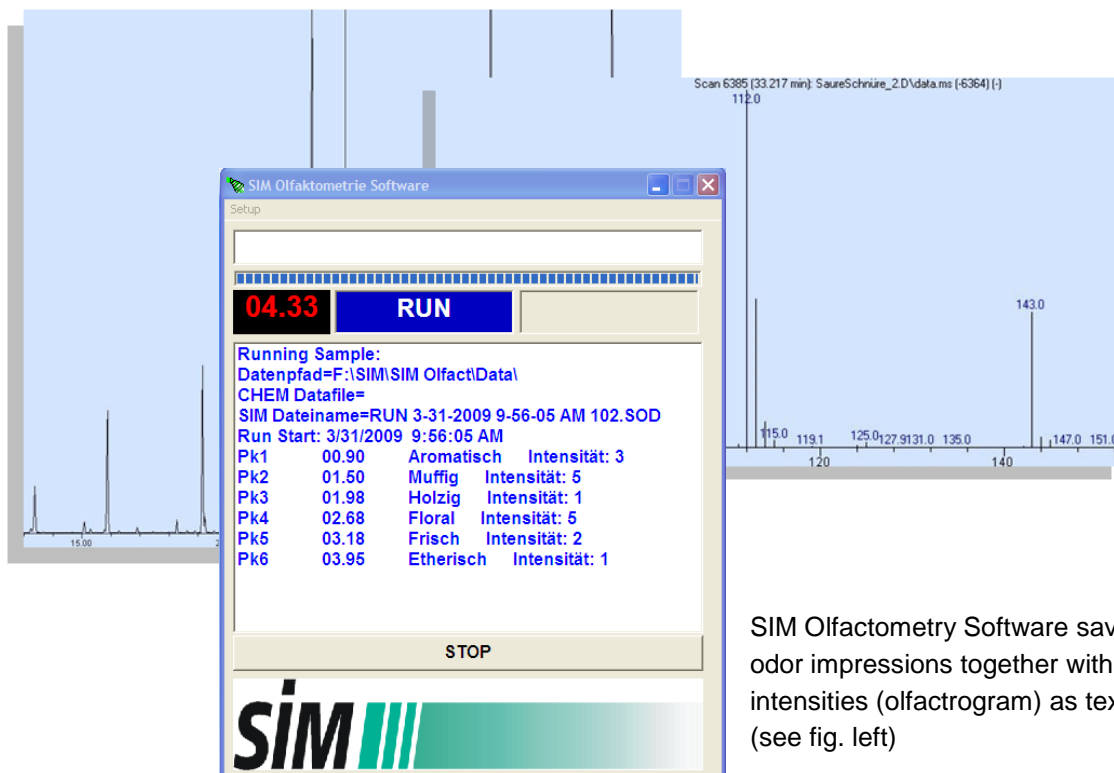
- **Simultaneous detection with other GC detectors** (e. g. FID, MSD, ECD)
 At the end of the column, flow is split into the OFD part and the part for a conventional detector. Either a standard parallel splitter or a microfluidic splitter is used for this technique. Simultaneous detection enables the definite correlation of the odor impressions to the recorded chromatogram.

The **Microfluidic-Splitters** (with/without make-up gas, Deans-switch) use Agilent Capillary Flow Technology that gives you the ability to precisely divert the gas flow pneumatically. Also all gas flows can be adjusted comfortably by means of the instrument software.



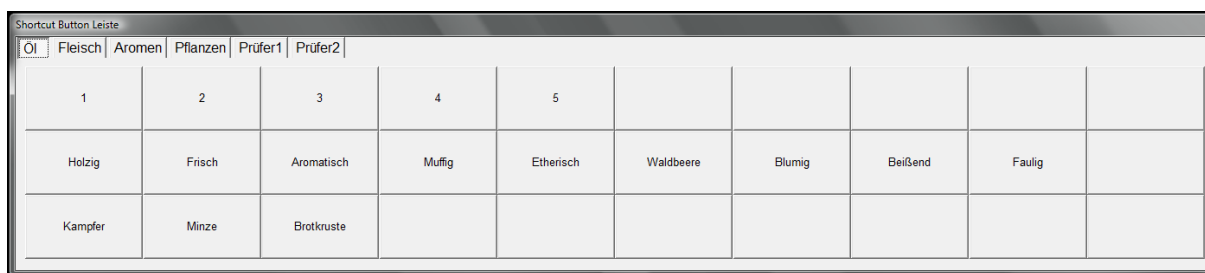
Microfluidic Splitter mit EPC

Data Acquisition – SIM Olfactometry Software:



SIM Olfactometry Software saves odor impressions together with the intensities (olfactogram) as text file (see fig. left)

- **Odor impressions** can be recorded in different ways with the keyboard or mouse as text file.
- Numbers are used to describe the **intensity level**.
- Different ways for **rapid recording** of odor impressions – according to the testers' preferences – that give lots of flexibility:
 - free definition of shortcuts for input via keyboard
 - menu bar with predefined odors and intensities
 - storage of individual odor classes (for different samples or different testers):



Shortcut Button Liste									
Ol	Fleisch	Aromen	Pflanzen	Prüfer1	Prüfer2				
1	2	3	4	5					
Holzlig	Frisch	Aromatisch	Muffig	Etherisch	Waldbeere	Blumig	Beißend	Faulig	
Kampfer	Minze	Brotkruste							

Integration of the OFD into the Agilent Chromatography Software

- Temperature of the transfer line as well as all gas flows can be controlled by the chromatography software (saved in the methods)
- Olfactogram is saved as text file in the same folder as the chromatography data of the GC run
- Synchronous Start-Kit for the OFD Stand-Alone Software with Agilent Chromatography Software

Article	Order No.
Olfactory Detector for Agilent 7890 GC*	OD 1000 78 00
Parallel Detection Kit (manual)	OD 1000 78 00 OPT020
Parallel Detection Kit (microfluidic splitter, electr. controlled)	OD 1000 78 00 OPT021
Parallel-Detektion Kit (Deans Switch, electr. controlled)	OD 1000 78 00 OPT022
SIM Olfactometry Stand-Alone Software Kit with synchronous start	OD 1000 78 00 OPT055

*OFD for other gas chromatography systems available on request