

GERSTEL

Olfactory
Detection
Port
ODP



Olfactory detection synchronized with GC/MS analysis

Voice-to-text descriptor generation with time and intensity annotation

Accurate presentation across a wide volatility range

Comfortable operation with flexible positioning and humidified make-up gas

Olfactory Detection Port ODP

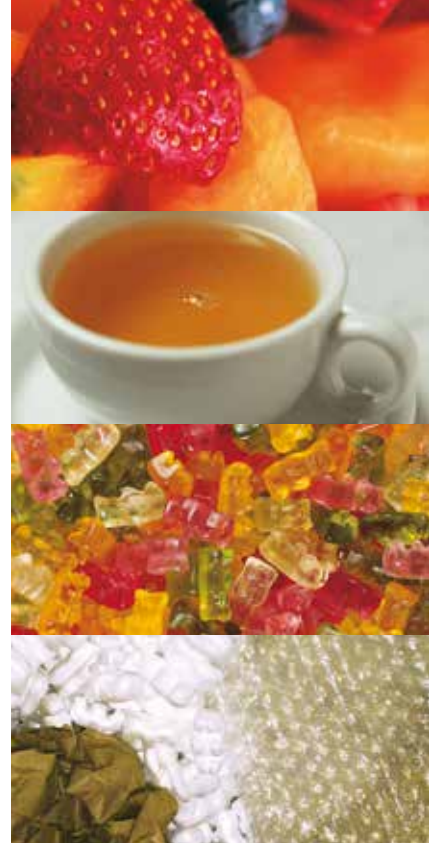


The GERSTEL Olfactory Detection Port (ODP 3) is used by the foremost olfactory analysts and scientists in leading companies throughout the world. The ODP is optimized for excellent recovery and sensitivity, even for high-boiling and polar compounds; it reliably and concisely presents compounds that have been separated on a GC column to the human nose for accurate olfactory determination without band broadening or remixing.

Parallel analytical detection by any GC detector, including MSD, FID, and FPD can be set up with a user defined split ratio. The ODP Column Calculator Software enables easy optimization and setup of the required split flows. Retention times on all detectors, including the ODP, are synchronized to ensure that odor signals are correctly assigned to peaks for reliable determination.

An olfactogram that includes odor descriptors, odor retention time and intensity is superimposed on the chromatogram and presented as part of a comprehensive report for each GC run. Voice-to-Text technology is used to produce descriptors directly from the analyst's comments during the olfactory session. The comments are stored in order to clarify descriptors if needed. All descriptors can be modified within the report when necessary. The ODP can be optimized for individual preferences in terms of ergonomic position, flows and humidity.

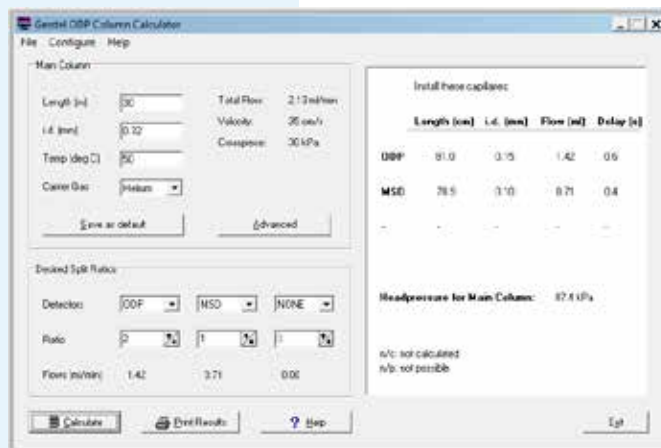
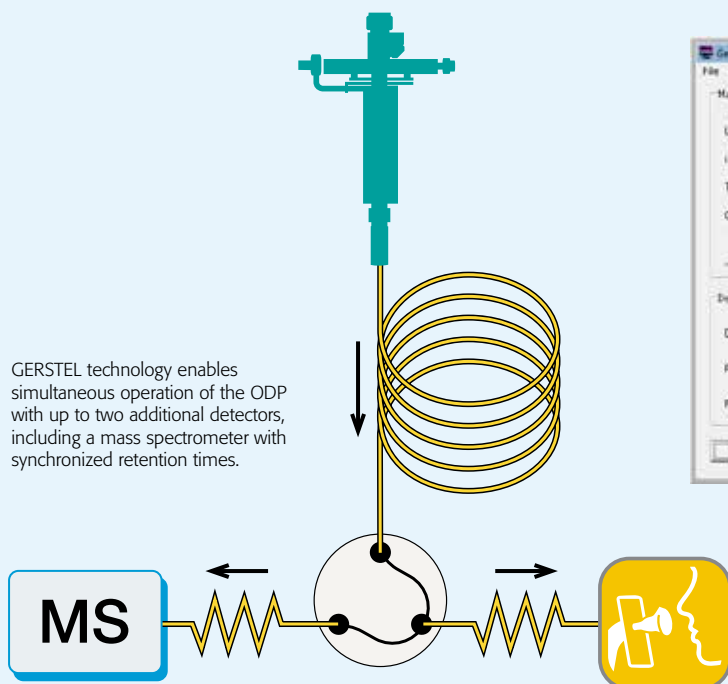
The ODP is an effective tool for obtaining simultaneous sensory and analytical information when determining odors in foods, beverages, fragrances, consumer products and other complex samples - as well as in associated packaging material. GERSTEL offers regular practical workshops lead by a highly experienced olfactory analyst. Here users can gain valuable knowledge and practical skills for olfactory detection.



The flexible heated transfer line and the gooseneck support of the ODP enable a highly individualized setup adapted to the user. This ensures the highest level of comfort during olfactory detection.

GC/MS System equipped with GERSTEL MultiPurpose Sampler with Dynamic Headspace (DHS) and a GERSTEL Thermal Desorption Unit (TDU) as well as the GERSTEL ODP. The system is an optimized solution for flavor analysis and for concentration and determination of trace level odors.

GERSTEL technology enables simultaneous operation of the ODP with up to two additional detectors, including a mass spectrometer with synchronized retention times.



The GERSTEL ODP Column Calculator Software allows fast and easy selection of the restriction capillaries required for up to two additional detectors with synchronized retention times for accurate compound identification.

Features and Benefits of the Olfactory Detection Port ODP

Dual heated zones (heated transfer line and humidity mixing chamber)

- Accurate determination of odors across a wide boiling range (including SVOCs) without condensation
- Complete heat tracing minimizes carry over, reducing identification ambiguity and false positives

Low dead volume

- Accurate identification without the risk of dispersion and re-mixing of separated compounds

Comfortable operation

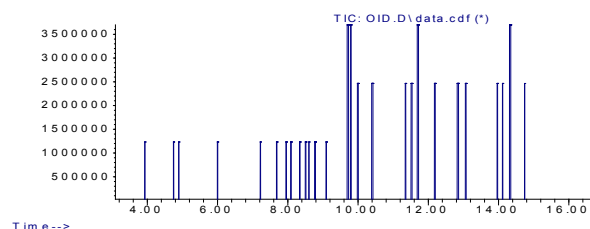
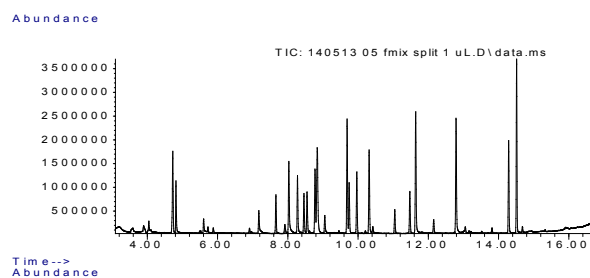
- Easily conforms to the analyst's preferred position through flexible heated transfer line and support arm
- Voice-to-text feature allows for distraction free, "eyes-closed" operation. No distracting sliders, color coded buttons or descriptor templates are needed
- Make-up gas can be humidified to prevent dryness in nasal passages.

Olfactogram is recorded in parallel to chromatogram

- Simultaneous olfactory assessment of flavors and odors parallel to GC analysis
- The user can concentrate on smelling the effluent thanks to voice recognition of spoken qualifiers
- Reliable assignment of odor descriptors to the associated peak with automated peak annotation
- Simple manual odor/peak intensity input

Collection of fractions for further analysis

- The GERSTEL *single*PFC enables the collection of fractions on a sorbent filled thermal desorption tube.
- Fractions to be collected are selected by mouse-click in the MAESTRO method.
- Collected fractions can be reanalyzed using different techniques (e.g. NMR) or a different polarity GC column



Chromatogram and Olfactogram of a sample with a multitude of flavor active compounds (stacked view)

Reliable operation

- Synchronized retention times enable the exact assignment of odors and descriptors to the peak
- The ODP Column Calculator Software performs fast and easy selection of the required restriction capillaries with associated split ratios
- Simple setup of one or more additional detectors with synchronized retention times for correct identification
- Removable nose cone for easy cleaning or "on-the-fly" swap out.

Practical ODP Workshop

- GERSTEL offers regular practical workshops with a highly experienced flavor analyst as instructor.
- The GERSTEL ODP Workshops allow users to gain valuable knowledge and practical skills for olfactory detection. For more information, contact gerstel@gerstel.com or visit www.gerstel.com.

GERSTEL ODP Recorder Software

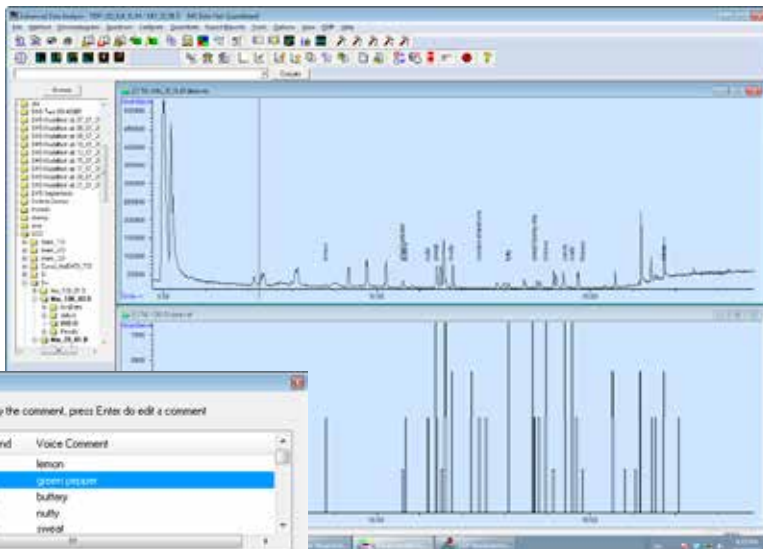


The GERSTEL ODP Recorder Software is fully integrated with the Agilent GC or MS ChemStation and GC MassHunter. This means that the olfactogram and GC/MS chromatogram can be overlaid for easy compound identification.

The olfactogram consists of manually entered intensity readings for individual olfactory impressions combined with the flavor descriptors spoken by the analyst. The OID offers four intensity levels that can be entered without distracting the analyst. Spoken comments are converted into text using voice recognition software and these are added to the intensity signals as annotations / text descriptors.



Spoken flavor descriptors are stored and can be replayed in case any questions arise. The generated text comments are easily edited.

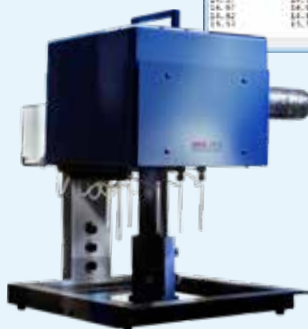


| Peak Start | Peak End | Intensity | Comment |
|------------|----------|-----------|--------------------|
| 08:00 | 08:01 | | lemon |
| 10:59 | 10:51 | | green pepper |
| 10:67 | 10:70 | | buttery |
| 11:19 | 11:21 | | nutty |
| 11:38 | 11:40 | | crystal |
| 12:00 | 12:01 | | nutty |
| 12:05 | 12:05 | | crystal strawberry |
| 12:20 | 12:21 | | fatty |
| 12:30 | 12:31 | | crystal strawberry |
| 12:35 | 12:35 | | fatty |
| 12:40 | 12:41 | | sweet honey like |
| 12:45 | 12:46 | | crystal |
| 12:50 | 12:51 | | crystal |
| 12:55 | 12:56 | | fatty |
| 13:00 | 13:01 | | flawery |

Efficient GC fraction collection



Many times an odor can be clearly detected using the ODP, but not by the GC detector, and therefore, no corresponding peak is seen in the chromatogram. In order to analytically identify the compound responsible for the odor in these situations, the fraction must be collected multiple times and reanalyzed. The GERSTEL Preparative Fraction Collector (PFC) performs the fraction collection step automatically. It uses six glass traps that can be cooled or heated depending on compound volatility. Isolating and trapping over multiple GC runs provides a high enough concentration of the fraction so that it can be detected and identified by the original GC detector or by other techniques such as NMR.



GERSTEL Preparative Fraction Collector PFC with six traps and a main collection trap

The GERSTEL *singlePFC* performs fraction collection on a single sorbent-packed tube. This allows the sample to be reanalyzed under different chromatographic conditions (e.g. different column polarity). Sample re-introduction in this case is performed by thermal desorption of the sorbent tube in the GERSTEL Thermal Desorption Unit (TDU).



GERSTEL *singlePFC* with a single sorbent-packed trap

www.gerstel.com

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