GERSTEL

OlfactoryDetectionPort
ODP

Olfactory detection synchronized with GC/MS analysis

Accurate presentation across a wide volatility range

Voice-to-text descriptors with time and intensity annotation

Ergonomic operation with flexible positioning and humidified make-up gas

Sniff and trap technique for further analysis of unknowns

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Olfactory Detection Port ODP

The GERSTEL Olfactory Detection Port (ODP 4) 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.

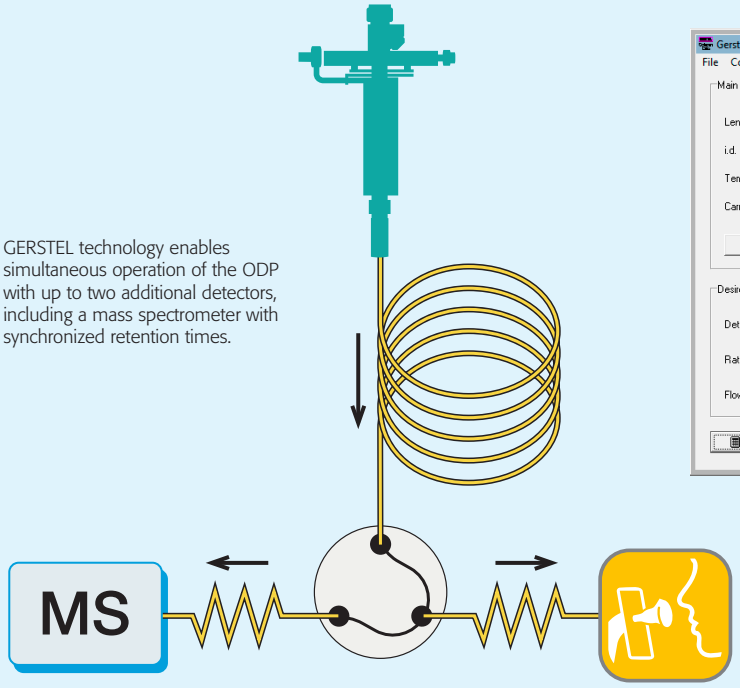
An olfactogram that includes odor descriptors, odor retention time and intensity is superimposed on the chromatogram and presented as part of a comprehensive report for each GC run. Voice-to-Text technology is used to produce descriptors directly from the analyst's comments during the olfactory session. 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 new GERSTEL Olfactory Data Interpreter (ODI) enables fast and reliable evaluation of olfactory information including identification of unknown odor-active compounds. ODI enables efficient evaluation of classical Aroma Extract Dilution analysis (AEDA), olfactory evaluation sensory panel analysis, multivariate data analysis and Mass Spectrometry (MS) library search. The sniff and trap option allows the trapping and concentrating of GC fractions at any retention time (RT). Off-line heartcutting can be obtained without changing the GC-column-system. The trap tube is easy to install - plug and trap.

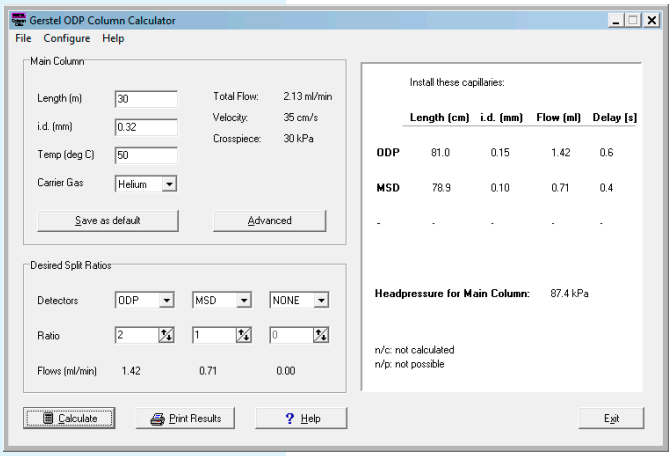
The ODP in combination with ODI is an effective tool for obtaining simultaneous sensory and analytical information when determining odors in foods, beverages, fragrances, consumer products and other complex samples - as well as in associated packaging material. GERSTEL offers regular practical workshops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

The multi-swivel holder is firmly held in place with a single turn of the fixation knob for freely adjustable ODP positioning and perfect ergonomics. Make-up gas with or without humidification can be added to the GC column effluent as required. The easily removable outer ring offers different sniffing options: sniffing with or without glass funnel. When sniffing without glass funnel the PTFE front end avoids skin irritations and marker pins ensure accurate and reproducible nasal positioning and best possible results, even at low flows. Furthermore, sorbent tubes can be inserted for trapping and concentration of interesting fractions for further analysis.

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

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.

Sniff and Trap

- Eluent collection at any retention time
- Enabling offline 2D GC function without changing the GC-column-system
- Suitable for all types of sorbent tubes, TDS, TDU2, TD 3.5+
- Easy installation of sorbent tube – plug and trap

Practical ODP Workshop

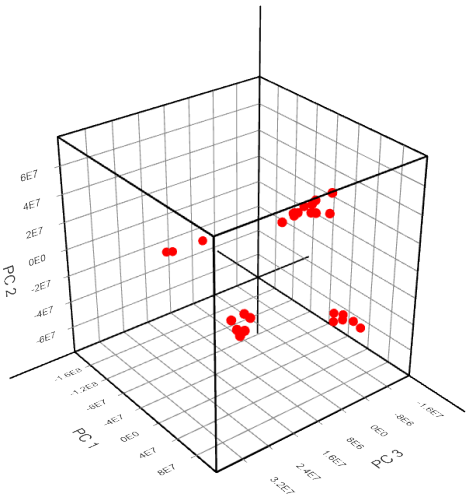
- GERSTEL offers regular practical workshops with a highly experienced flavor analyst as instructor.
- The GERSTEL ODP Workshops allow users to gain valuable knowledge and practical skills for olfactory detection. For more information, contact gerstel@gerstel.com or visit www.gerstel.com.

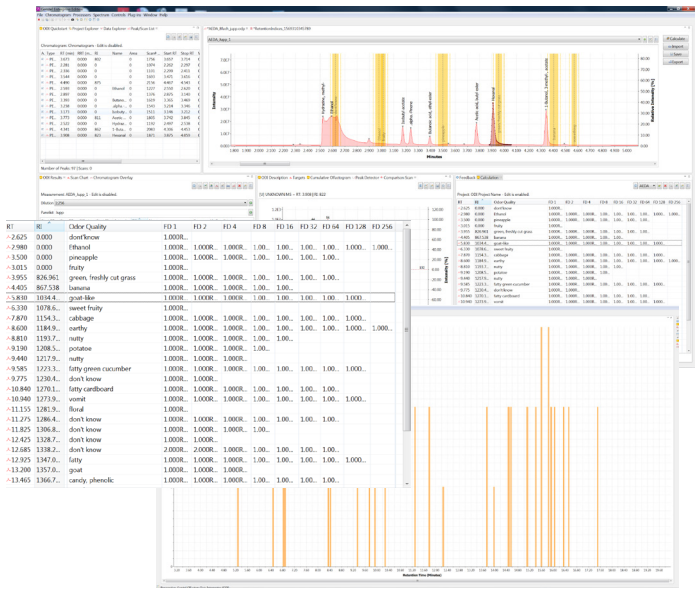
GERSTEL ODI Olfactory Data Interpreter

Chromatography data is typically acquired using a mass spectrometer / mass selective detector (MSD), a Flame Ionization Detector (FID) or a Sulfur Chemiluminescence Detector (SCD) or a combination thereof. The chromatogram is loaded into the ODI software. In parallel, an olfactogram is imported with information provided by the user as he or she assessed odors eluting from the GC column in parallel with the detection process during the GC run. The combined information is presented in the ODI-Software in a clear and concise overview.

In addition, the detailed report of the signals registered during olfactory detection at the sniff port also includes important parameters such as retention time (RT) and retention index (RI) as well as NIST library search results for compound identification. The audio file with descriptors is stored for later evaluation, as needed. If changes to the initial impression have been realized, the text comments can be edited. Regarding the MS data, results from database searched can be aligned with Retention indices (RIs) calculated by the ODI Software.
To evaluate olfactory information and determine the identity of a critical or key odor active compound or compounds the ODI provides the analyst with several helpful software features and functions.

Cumulative Olfactogram: When a sample is evaluated in multiple dilutions using Olfactory GC (GC-O), the resulting olfactograms are conveniently combined and presented in cumulated form: The ODI software adds the respective odor intensities and displays the cumulative value. Substances that are still above the odor threshold in the highest dilution will be represented with the highest values in the cumulative olfactogram. The cumulative olfactogram function is a simple yet efficient tool that instantly provides the odor analyst with reliable information as to which compounds belong to the group of more potent odor active compounds that influence the flavor or odor impression even at very low concentrations.





Aroma Extract Dilution Analysis (AEDA): The ODI Software enables efficient evaluation of classical AEDA with defined dilution factor (Flavor Dilution, FD). The ODI software performs all calculations and determines the FD value, which is a measure of the intensity of an odor active compound within a mixture. The AEDA report provides the sensory analyst a tool for simpler and more efficient evaluation of panel data.

Sensory Panel Analysis: If a sample undergoes olfactory evaluation by a sensory panel, the resulting data will show how many panel members perceive a given impression or compound. This information can be very helpful as a supplement to GC-O data or to correct GC-O data, as well as for further analysis and aroma identification. Manually generated reporting can be both cumbersome and labor intensive, requiring a lot of time. The Olfactory Data Interpreter helps to perform the panel analysis evaluation by mouse-click and delivers the detection frequency of each compound without delay.

MS Library Search: Spectral recognition is performed using existing libraries; various data formats can be used. The GERSTEL Application Laboratories recommend the NIST-AMDIS software, which is coupled directly to the ODI Software enabling efficient and convenient compound identification and spectral deconvolution of co-eluting compounds.

Multivariate Data Analysis: The ODI Software is offered with a Principal Component Analysis (PCA) which helps to quickly and efficiently solve odor riddles and identify unknown compounds found in GC/O analysis. When it comes to GC/O data handling and data processing, the GERSTEL ODI offers the tolerance range and flexibility required in order to efficiently navigate the uncertainties of olfactory analysis and to reach not just an answer, but the correct answer.

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