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CHROMATEC TDA Thermal Desorption System

Must-have environmental solution

TDA - our newest mark, is created by Chromatec engineers to be a leading solution in Thermal Desorption - the major technique in indoor, outdoor air analysis & emission examining.

Key features and smart options:

- 50-tube on-top automatic loader
- Easy connection to any GC
- Touch screen with graphical interface
- Fully independent integrated pneumatic control
- Peltier cooled trap without dry air needed
- Inert high temperature flow path (350°C)

- Sequence overlapping
- Automatic leak test
- Water management system
- Tube marking in accordance with EN 1076
- Near-zero carryover
- Compliant with US EPA TO-14, TO-15, TO-17, ISO 16017-1, 16017-2

Chromatec TDA is a high-performance fully-automatic two-stage thermal desorption system

TDA Technical Specifications

Tube size	Outer diameter: 1/4" (6.35 mm); Length: 3.5" (89 mm)
Tray capacity	50
Tube desorption temperature, °C	from (Tamb+10) to 425 (1°C resolution)
Trap temperature, °C	from -20 to 425
Trap heating rate, °C/min	500; 1000; 1500; 2000; 2500; 3000
Valve temperature, °C	150 to 350
Transfer line temperature, °C	40 to 350
Sample path	SilcoNert® 2000 & SS 316 activity tested, heated up to 350°C
UEPC	3 built-in channels: Carrier gas, Purge gas & Split vent (optional)
Carrier gas flow rate, ml/min	0 to 200
Purge gas flow rate, ml/min	0 to 200
Control	Chromatec Analytic(tm) Software or Touchscreen
Dimensions (W, D, H) & Weight, max	345, 550, 630 mm & 30 kg
Power supply & consumption	220V AC, 50/60Hz, 700W
Interface	LAN
Compatibility	Any GC

TDS-1

Is a single tube double stage thermal desorption system. TDS-1 is an ideal proposal for laboratories with small sample throughput.

- Manual tube exchanging
- Fully automated gas & temperature control
- Totally electronic temperature programming
- Peltier cooling trap

For more information please refer to Chromatec Thermal Desorption web page at:

https://chromatec-instruments.com/products/sample-introduction/thermal-desorbers/

On-top location of loader - compact footprint with easy access to the tray

Chromatec TDA efficiently uses the space with increased functionality! Narrow design with embedded touchscreen display allows a 24 hours runtime even in challenging spaces.
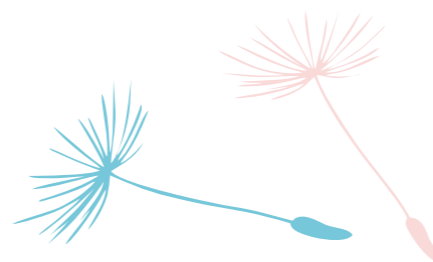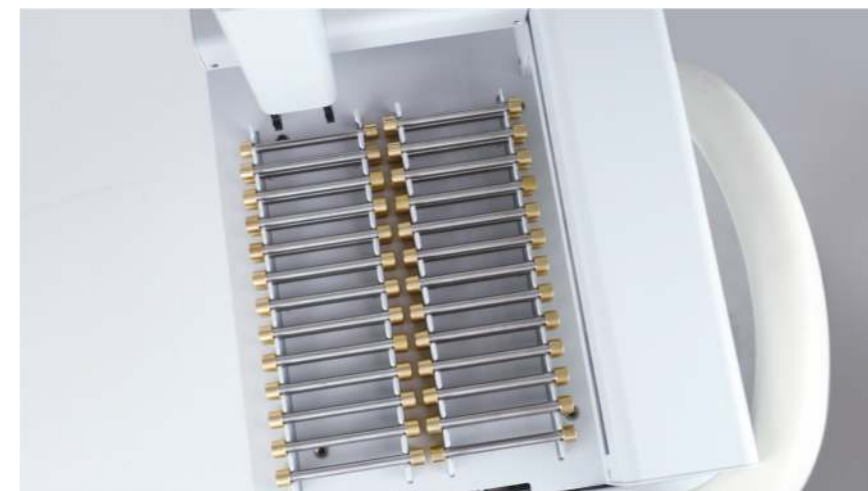
Easy Connection to any GC

Thanks to the fully independent pneumatic control of gases along with user-friendly touchscreen interface it is possible to connect the Chromatec TDA to any GC available on the market.
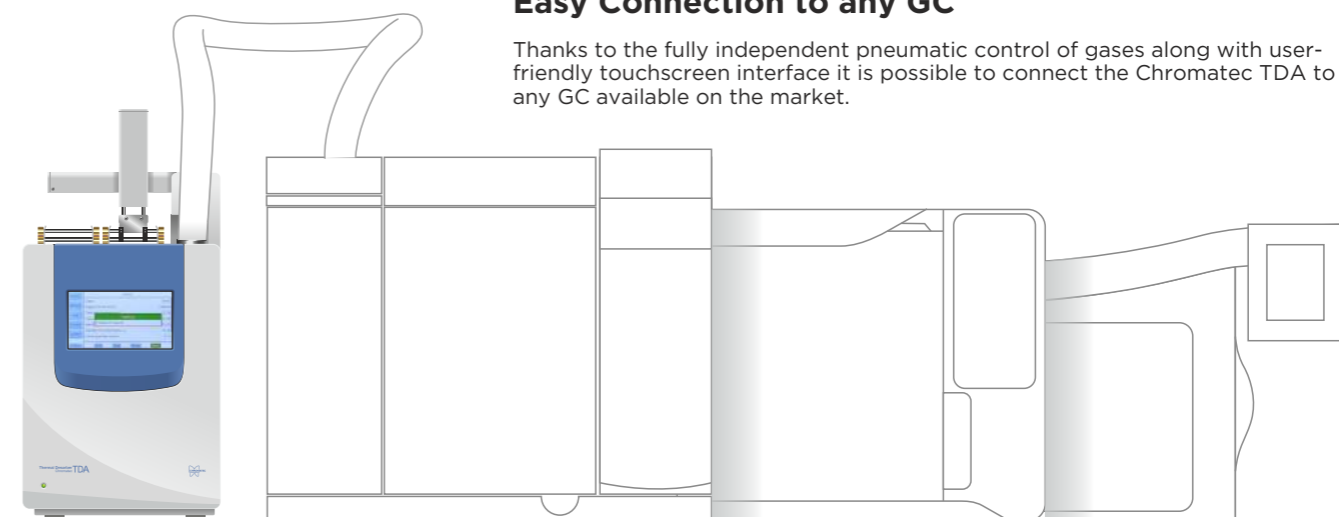
Comfortability and convenience in operation with Chromatec Graphical Interface even with GC & GC-MS third-party systems.

Extra guarantee to save samples for analysis by improved design of sorbent tube sealing and automatic re-sealing in case of leak.

Complete circle of auxiliary equipment for thermal desorption

Sampling pump Chromatec PV-2

Designed by Chromatec specifically for GC-TD purpose. Low flow rate prevents breakthrough of high volatile compounds.

- Mass flow rate - 20..200 ml/min
- 2 independent sampling channels
- Long-life internal battery - up to 10 hours of standalone work
- Power supply: internal battery, ~220V AC, 12V DC

Tube cooling unit

The additional chiller is used for cooling sorbent tubes during sampling. It can help to increase sampling volume and prevent breakthrough.

Desorber for Tube Conditioning

This simple but effective device is intended to ensure you that tube is completely free of "memory" after analysis.
Moreover you can use this Tube Conditioning System to clear not-desorbed tubes because of interrupted sequence or if the sample was unclaimed.
Device can clear up to 10 tubes simultaneously.

Injection unit

This useful device is intended to load gas or liquid sample into a sorbent tube for calibration of GC-TD system.

Sample tubes

Chromatec TDA operates with most wide-spreaded ¼" sample tube standard so one can use a vast variety of tubes made by different manufacturers (Supelco, Restek, Chromatec etc.). Thermal desorber can work with stainless steel or glass and single- or multi-bed sample tubes.

All-in-one Software

Chromatec Analytic is a unified software solution for instrument management and data handling.

Non-stop operation and enhanced throughput with simple and convenient maintenance early planning in built-in Maintenance Help Station. Software provides beforehand notification of needed service actions based on the integrated counter for user-defined parameters, e.g. changing traps, sealing elements, etc.
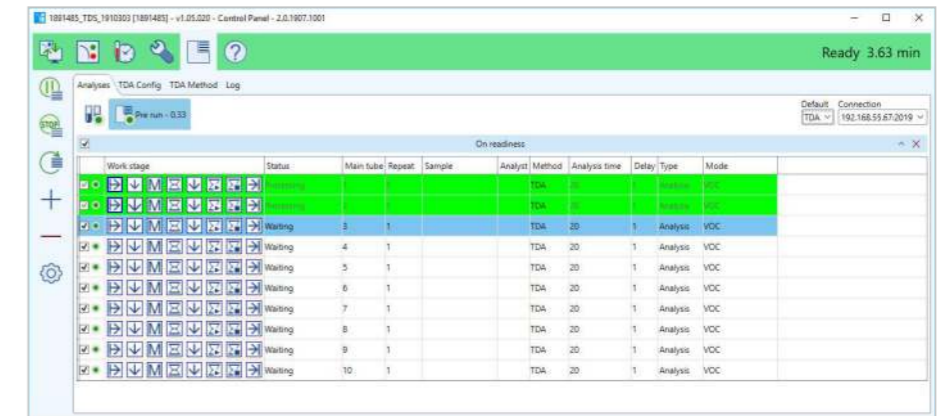
Control Panel operates all internal and external modules and devices in simple and efficient manner.

Analytic's™ Task Manager provides full flexibility in sequence management and comprehensive control over its execution.

Multiple methods

Chromatec Analytic(tm) Software allows setting different methods for every sample in sequence.
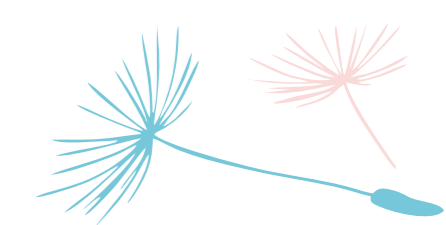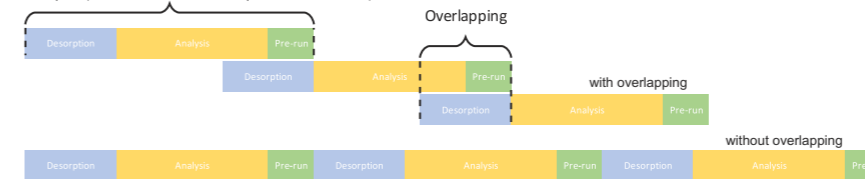
Priority Sample Run

Easy to rearrange the sequence execution to run the urgent samples on needed time without calling off the main cycle.

Smart Sequence Overlap for time saving

Perfect time managing thanks to overlapping of different desorption stages of subsequent samples.
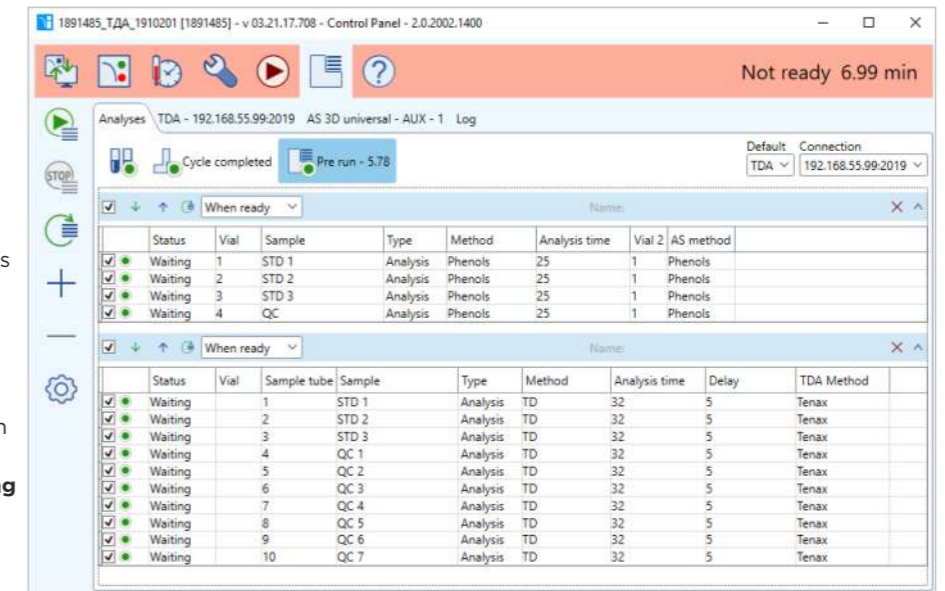
GC cycle (calculated automatically from GC method)

Overlapping

with overlapping

without overlapping

Highest Level of Protection for your Data!

Duplicated
Primary and secondary storages on different physical places on your PC will save your data in case of any trouble with one of your hard disks. This simple solution is much more comfortable and easier to handle than RAID or data imaging systems.
Distributed
Both storages can be physically located on remote mediums to improve the access control and data security
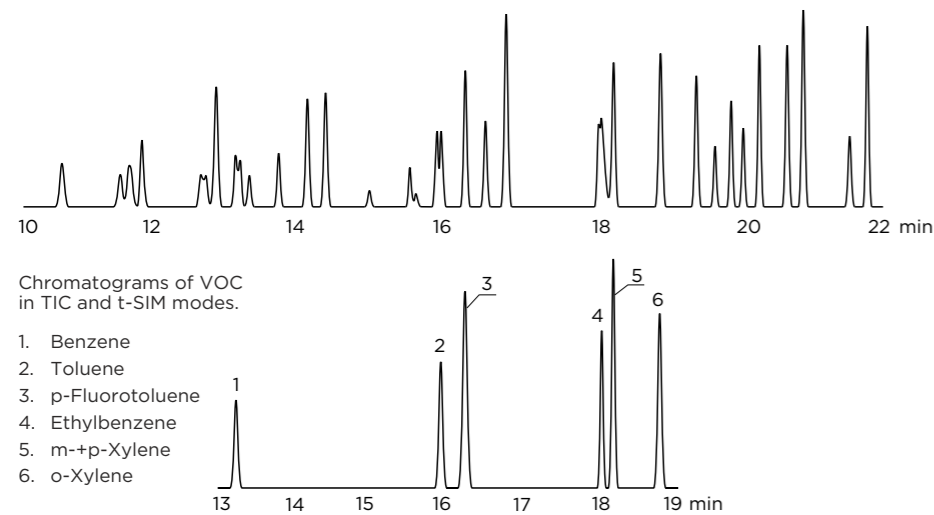**Secured**
Primary data storage can be secured by third-party software.
Backed up
Primary storage backup on a regular or occasional basis allows to restore all the data after sudden system failure.

Administration

Settings

Data store

Data store primary   \Analytic 3\Project\   ...   Move

Data store secondary   \ReservData\Project\   ...   Apply

Create a backup

Restore the saved data from the backup

Create a build of utilities to configure the remote data store

add the connection settings to a installation package on a USB drive

The main application of thermal desorption is analysis of volatile and semi-volatile organic compounds in ambient, workplace and indoor air. A variety of constantly tightening governmental regulations (EPA, HJ, TO and others) in air quality control makes the TDA an essential instrument for every environmental lab. The TD technique is also used to determine VOCs in solid samples, for example, to determine residual solvents in pharmaceutical products, packing materials, monomers in polymers, odors and flavors in food products, etc.

Solid sample thermal desorption

Direct thermal desorption is used for analysis of volatile components of solid or semi-solid materials, e.g. polymers, waxes, powders, pharmaceutical substances, foods and cosmetics. The specimen is placed inside a sample tube and heated to release the vapors to the focusing trap directly. In contrast with pyrolysis injectors, the TDA operates at lower temperatures and doesn't cause sample thermolysis, what allow to repeat the testing if needed.
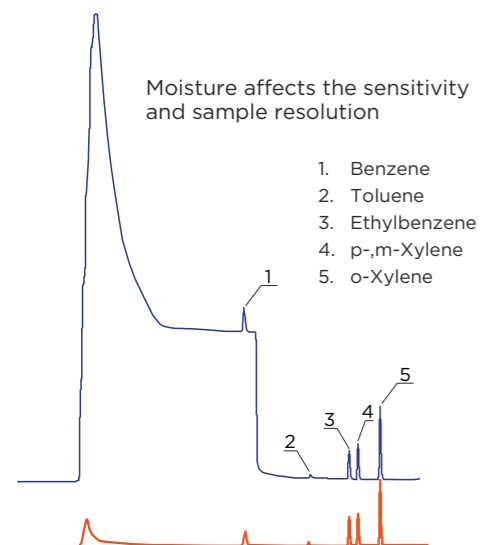

Customized Multi Ion Acquisition and Monitoring

Analytic Software could be configured to create lots of acquisition channels with summarized chromatograms for user-selected masses.
Therefore the operators now have this comfortable option to observe and storage specific multi-ion chromatograms for customized compounds or internal standards without any additional extraction or other manual intervention after the analysis.

Chromatograms of VOC in TIC and t-SIM modes.

1. Benzene
2. Toluene
3. p-Fluorotoluene
4. Ethylbenzene
5. m-+p-Xylene
6. o-Xylene

Chromatogram resulting from direct sample extraction of flavored soap for fragrance components.

1. Hexanal
2. Butanoic acid ethyl ester
3. Butanoic acid 2-methyl-, 1-methylethyl ester
4. Acetic acid hexyl ester
5. 7-Octen-2-ol, 2,6-dimethyl-
6. Hexanoic acid, 2-propenyl ester
7. Acetic acid, phenylmethyl ester
8. 3,5,5-Trimethylhexyl acetate
9. Benzenemethanol, α-methyl, acetate
10. 4-tert-Butylcyclohexyl acetate
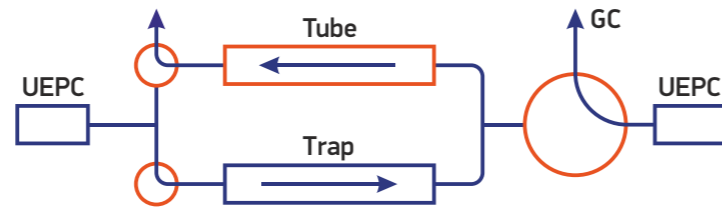11. Cyclohexanol, 4-(1,1-dimethylethyl)-

Moisture elimination

Trap and sorbent tube are blown by inert gas at ambient temperature before desorption to eliminate air and moisture. Reverse direction of blowing prevents trap from moisture.
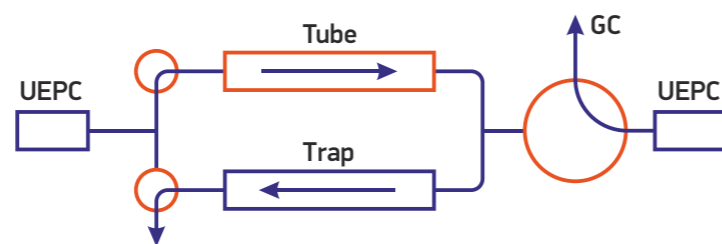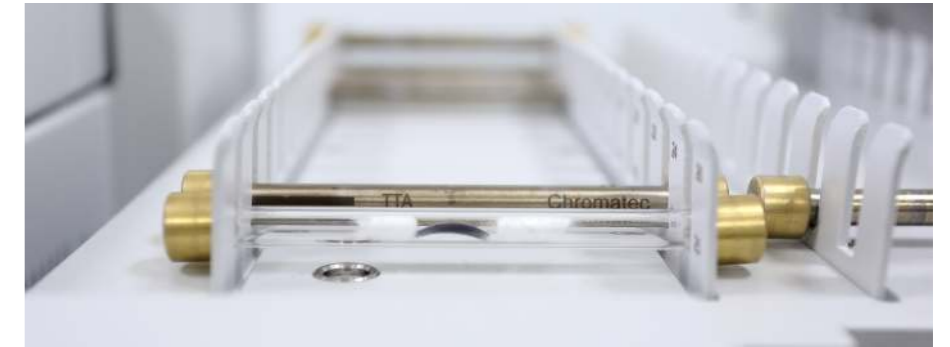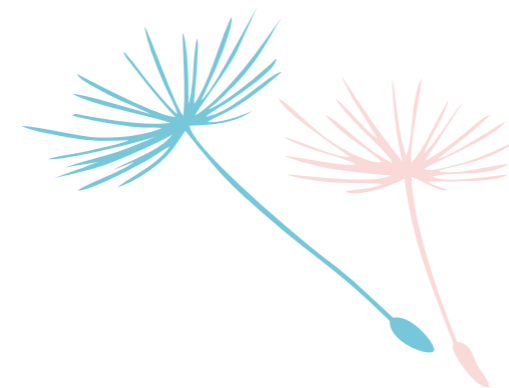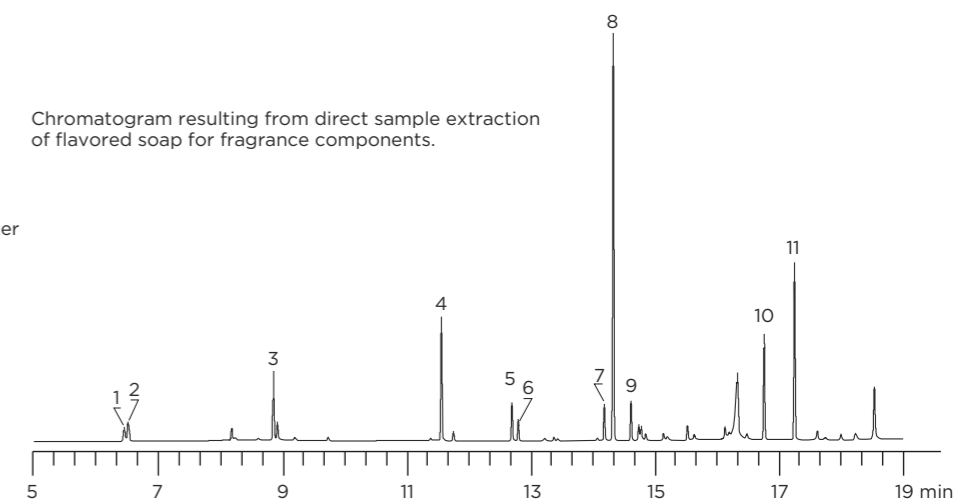

Moisture affects the sensitivity and sample resolution

1. Benzene
2. Toluene
3. Ethylbenzene
4. p-,m-Xylene
5. o-Xylene

Chromatogram of BTEX in high humidity air with (red) and without (blue) moisture elimination.

Moisture elimination

Desorption

Near-zero carryover

The effect of memory peaks is a big problem in sample concentration techniques. Chromatec TDA with a new high-efficiency design confirms the complete desorption of components in a wide boiling range after the introduction of high concentration samples.

First desorption

Second desorption (carryover)

10^3x zoom
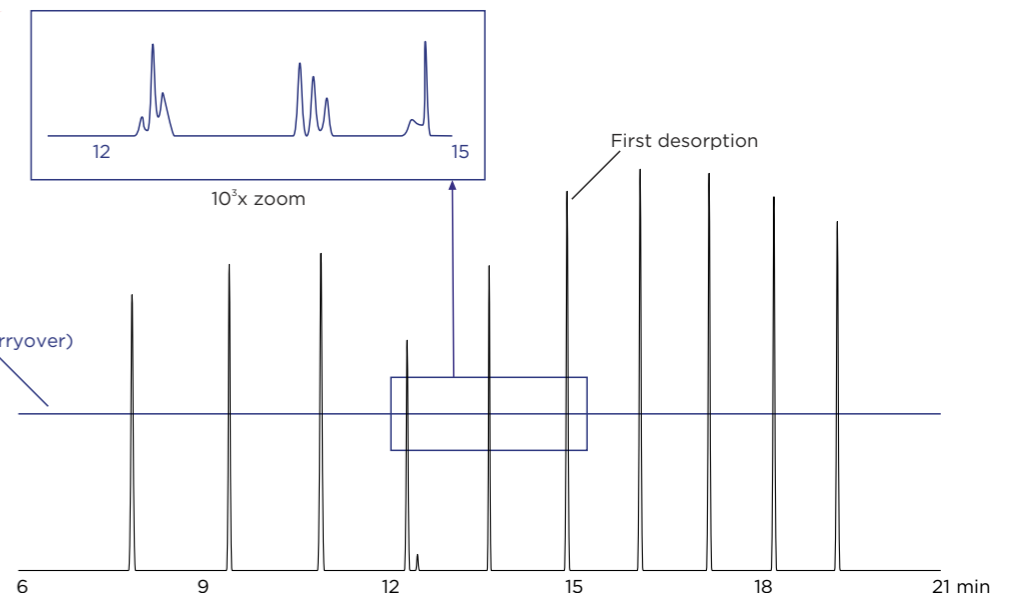
Overlapped chromatogram of 1mg C10-C19 hydrocarbons standard mixture and second blank desorption as carryover.