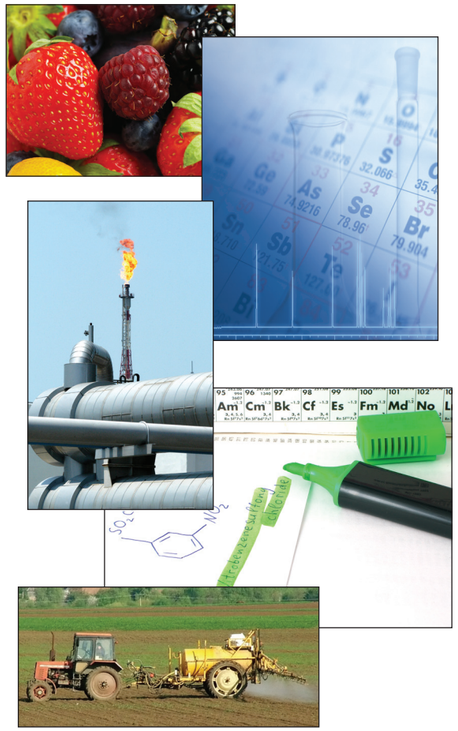
# Selective Detectors for Gas Chromatography

O·I·Analytical
a xylem brand

# Enhancing Chromatographic Performance



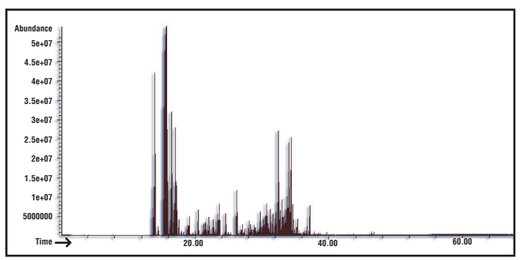
While gas chromatography coupled with mass spectrometry (GC-MS) is a powerful analytical technique, there are significant advantages to using selective GC detectors alone or in tandem with a MS detector for many applications.

A mass spectrometer is a universal, nonselective detector that yields total ion chromatograms containing a large number of compounds. Post-run mass spectra library searching is required to identify target compounds.

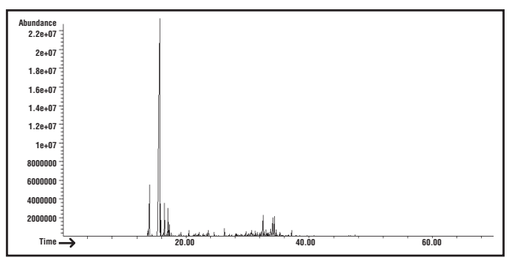
Selective GC detectors enhance chromatographic performance by measuring trace levels of target compounds in the presence of higher concentration compounds, or matrix interferences.

Selective GC detectors provide precise retention time marking for improved MS library matching and peak identification.

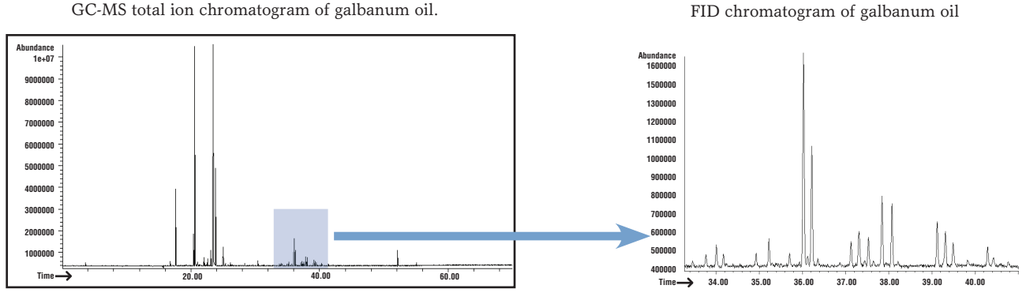
Co-elution of interferences in essential oils can make locating compounds responsible for characteristic aromas in a MS chromatogram quite difficult. The accompanying GC-MS total ion chromatogram of galbanum oil contains a large number of co-eluted compounds. A simultaneous sulfur mode PFPD chromatogram helps pinpoint sulfur compounds contributing to the fragrance profile of the oil.




GC-MS total ion chromatogram of galbanum oil.




FID chromatogram of galbanum oil




Simultaneous sulfur mode PFPD chromatogram of galbanum oil.

## Selective GC Detectors for Challenging Analytical Applications

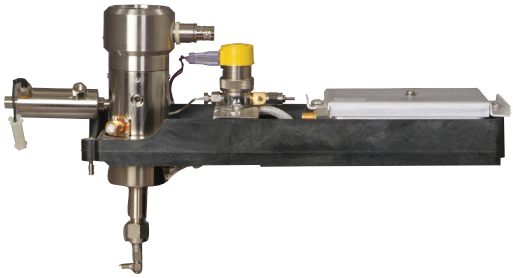
OI Analytical selective GC detectors provide solutions to challenging analytical applications. Detecting sulfur species in petrochemicals, trace levels of organochlorine and organophosphorus pesticides in food samples, or sulfur and aromatic compounds in flavor and fragrance extracts are prime examples of applications that benefit from the use of selective GC detectors.

Compatible detectors are available for current models of GC instruments manufactured by Agilent, Bruker, Shimadzu, Thermo, and PerkinElmer.

| | PFPD | XSD | ELCD | PID | PID/FID | PID/ELCD | PID/XSD |
|---|---|---|---|---|---|---|---|
| Aromatics | | | | ■ | ■ | ■ | ■ |
| Alkenes | | | | ■ | ■ | ■ | ■ |
| Arsenic/Tin | ■ | | | | | | |
| BTEX | | | | ■ | ■ | ■ | ■ |
| Chemical Weapon Agents (CWA) | ■ | ■ | | | | | |
| Chlorinated Pesticides | | ■ | ■ | | | | |
| Chlorinated VOC's | | ■ | ■ | | | | ■ |
| Herbicides | ■ | ■ | ■ | | | | |
| Olefins | | | | ■ | ■ | ■ | ■ |
| Organofluoride Compounds | | | ■ | | | ■ | |
| PCBs | | ■ | ■ | | | | |
| Phosphorus Compounds | ■ | | | | | | |
| S/P Pesticides | ■ | | | | | | |
| Sulfur Compounds | ■ | | | | | | |
| Trihalomethanes (THM) | | ■ | ■ | | | ■ | ■ |
| VOCs | | | ■ | ■ | ■ | ■ | ■ |

# Selective GC Detectors






## PFPD – Pulsed Flame Photometric Detector

The PFPD excels at selective detection of sulfur and phosphorus compounds, and can be configured to detect 26 other elements.

## XSD™ – Halogen Specific Detector

The XSD halogen specific detector is designed for selective detection of halogenated compounds such as pesticides, THMs, and PCBs.

## Tandem GC Detectors

OI Analytical patented* tandem GC detectors combine a photoionization detector (PID) with an FID or second selective detector providing two simultaneous chromatograms from a single run. The PID selectively responds to aromatic and unsaturated hydrocarbons in the presence of alkanes and saturated hydrocarbons. The second detector is used to further differentiate and identify compounds with specific heteroatoms.

## ELCD-Electrolytic Conductivity Detector

The ELCD is designed for high sensitivity measurement of halogenated compounds. Interfacing an ELCD with a PID as tandem detectors is prescribed in USEPA methods 502.2 and 8021 for measurement of chlorinated and aromatic volatile organic compounds (VOCs) in drinking water and wastewater samples.

* U.S. Patents 4,804,846 and 5,578,271

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