



1st Detect

MINIATURE CHEMICAL DETECTOR

VISIT US AT BOOTH #119



1ST DETECT'S MINIATURE CHEMICAL DETECTOR is an ion trap mass spectrometer for field portable and handheld applications. By leveraging advances in low power electronics and miniaturization technologies developed under the Space Program, 1st Detect is able to offer a fully functional Miniature Chemical Detector that is significantly smaller and lighter than those currently available. The 1st Detect Chemical Detector offers the capabilities and performance of a large laboratory massspectrometer, including a wide mass range, low detection limit, MSn capability and membrane inlet in a low power portable instrument.

FEATURES

1st Detect is able to provide a wide variety of custom products to suit your unique application. Our offerings include, but are not limited to:

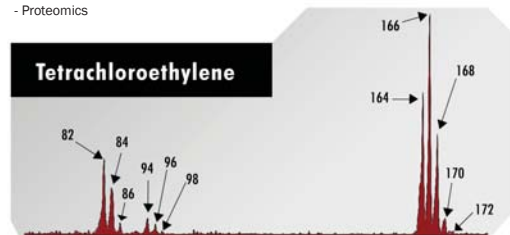
- **Custom Detection Ranges** - The instrument can be tuned to provide broad-band analysis over a wide range or can be optimized for a specific detection range. Applications include peptide analysis and POC Diagnostics.
- **Custom Sample Collection** - 1st Detect's Miniature Chemical Detector can be coupled to a wide variety of sample collection or pre-concentration / separation systems to suit the needs of a particular application. These include GC/LC, API sources, thermal desorbers, SPME, and many other custom sample inlets.
- **Networking** - For remote monitoring and distributed sensor networks, a variety of networking protocols can be implemented including Ethernet, Wi-Fi, RF, and proprietary protocols. This includes popular mobile networking protocols (CDMA, TDMA, GSM, 3G, etc.)
- **Pump-less Systems** - For applications that do not require external pumping (e.g., semiconductor process control), we can provide the advanced chemical detection capabilities without the integrated vacuum pumping system.
- **Battery Operation** - For field portable systems, 1st Detect can offer an integrated rechargeable power source using standard UBI-2590 batteries or standard 12/24 VDC vehicle power.
- **OEM Component** - For applications where customer packaging is desirable, 1st Detect can provide the core functionality without packaging for integration into customer specific packaging. Applications include customer specified hyphenated systems (e.g., IMS-MS, GC-MS) where a development partner supplies the front-end hardware.

APPLICATIONS

- **Industrial Process Control**
 - Semiconductor manufacturing monitor
 - Process/Quality control monitor
 - Water & Wastewater
- **Security and Defense**
 - Portable CWA/TIC detector
 - Detection of IEDs/VBIEDs
 - Portal explosive/chemical detector (e.g., airports)
 - Remote/perimeter monitor
 - Container and port security
- **First Response/Critical Infrastructure**
 - Portable Haz-Mat detector
 - Contraband/explosive detector (law enforcement)
 - Public water supply monitoring
- **Medical**
 - Point-of-Care diagnostics
 - Low-cost laboratory analyzer
 - Surgical gas analyzer
 - Proteomics

SPECIFICATIONS

- **Weight:** <15 lbs (~6.8 kg)
- **Mass Range:** 10 - 450 amu
- **Chemicals Detected:** (examples)
 - CWAs: GA, GB, VX, mustards, cyanides
 - Explosives: TATP, PETN, TNT, DNT, RDX
 - TICs per NJ Guide 100-00 and per ITF-40
 - Contraband: THC, cocaine, amphetamines
- **Resolution:** <1 amu
- **Analysis Time:** <2 seconds
- **Power Supply:** 120/240VAC, 24VDC or supplied batteries
- **Low False Alarm Rate:** True Mass Spec (not IMS) and MSn Capability
- **Developmental Testing and Evaluation (DT&E) Designation** from the U.S. Department of Homeland Security



CRITICAL INFRASTRUCTURE PROTECTION

- TERROR THREATS
- AIR QUALITY MONITORING
- PERIMETER PROTECTION
- PORTAL/PORTABLE DETECTION
- HVAC MONITORING
- WATER SUPPLY MONITORING



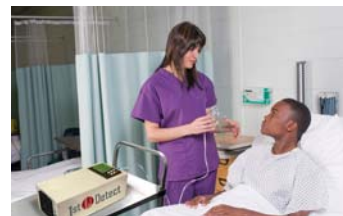
SECURITY

- FIRST RESPONDERS
- AIRPORT SCREENING
- PORTS/ BORDER VEHICLE AND CARGO SCREENING
- COAST GUARD INSPECTION
- CRITICAL INFRASTRUCTURE PROTECTION & BUILDING SECURITY



HEALTHCARE

- POINT OF CARE DIAGNOSIS
- LOW COST SATELLITE LABORATORY ANALYZER
- SURGICAL GAS ANALYZER
- NEWBORN SCREENING
- QUICK ASSESSMENT FOR FIRST RESPONDERS AND PARAMEDICS



INDUSTRIAL PROCESS CONTROL

- RESIDUAL GAS ANALYSIS (RGA)
- PROCESS CONTROL MONITOR
- QUALITY CONTROL MONITOR
- POLLUTION AND ENVIRONMENTAL CONTROL
- ENERGY PRODUCTION OPTIMIZATION



DEFENSE

- PORTABLE CWA/TIC DETECTOR
- DETECTION OF IEDS AND VBIEDS
- CHECK POINT SCREENING
- PERIMETER MONITORING
- CRITICAL INFRASTRUCTURE PROTECTION



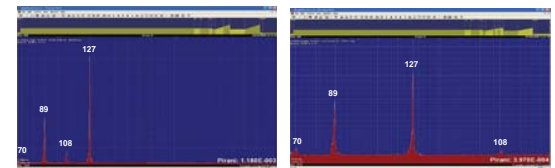
FIRST RESPONDERS

- PORTABLE TIC/TIM DETECTION
- FAST RESPONSE/STARTUP TIME
- ABILITY TO DISPLAY MEDIATION AND PPE REQUIREMENTS ALONG WITH POSITIVE SIGNALS
- TIP AND CUE INTERFACE
- ADAPTABLE TO A WIDE RANGE OF THREATS



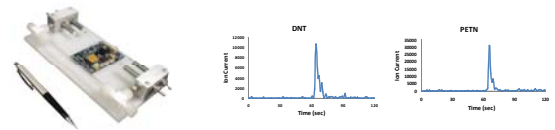
MS^N CAPABILITY

- As the 1st Detect MMS is an ion trap mass spectrometer, MS/MS (MSn) mode can allow orthogonal analysis without the need for additional hardware
- The automated MSn mode can verify a positive result without the need for an expert user intervention, thus reducing false alarms to near zero



PRE-CONCENTRATOR

- An optional pre-concentrator can be added that increases the sensitivity of the MMS by > 10⁵ without adversely affecting analysis time
- Custom materials can be integrated to reduce background contamination



MMS NETWORKING CAPABILITY

- **Developing Capability for MMS secure communication and control via network:**
- **Network independent**
 - (e.g., Ethernet, wireless LAN, RF, Wi-Fi, GSM, 3G, TDMA, CDMA, etc.)
 - Have demonstrated: Ethernet, Wi-Fi, 3G to date
 - Anticipated to be compatible with military and proprietary protocols
- **Designed for distributed sensor networks**
- **Platform independent architecture**
- **Instrument independent architecture**
- **GPS location reporting**

