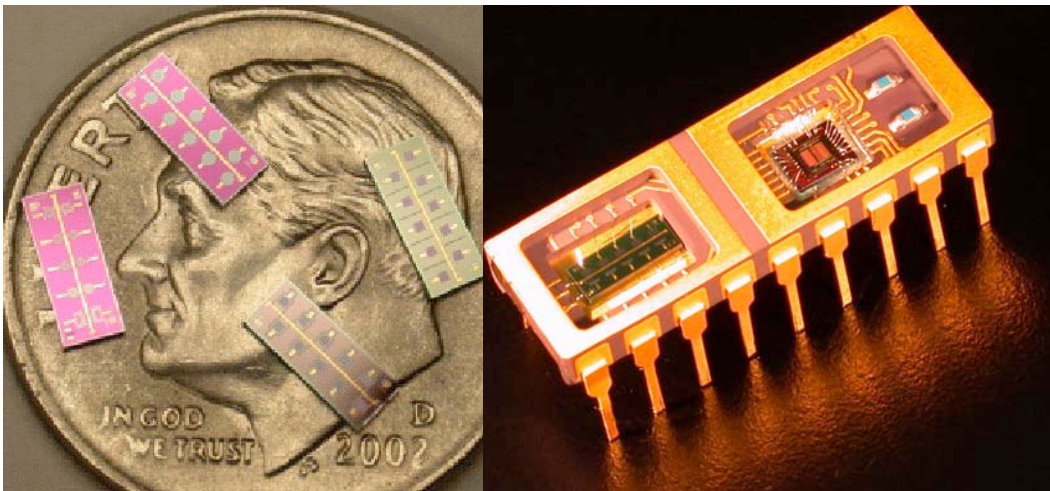


# Guide to our Technology



## For Chemical Sensing Solutions Requiring:

- Detection of Narcotics and Illicit Laboratories
- Detection of Volatile Organic Compounds (VOC)
- Detection of Toxic Industrial Chemicals (TIC)
- Detection of Selected Chemical Warfare Agents (CWA)
- Detection of Explosives

**Seacoast Science, Inc.** is a high technology company focused on the expanding chemical sensor and chemical detection market. Located in Carlsbad, CA, just north of San Diego, Seacoast Science is privately held. Founded in February of 2003 by a group of dedicated scientists Seacoast has grown to include a technical staff with over 40 years of combined sensor research and development experience. The company has patented MEMS microsensor technology and continues to file patents covering various designs, fields of use and applications related to their MEMS based technology. Seacoast currently hold licenses from the US Naval Research Laboratory for the manufacturing and use of chemo-selective polymers.

The Seacoast Science chemical detection system is handheld, small, lightweight and very rugged. Our units can be deployed aboard unmanned aircraft, with individual soldiers, or in fixed locations such as an office building or factory. We are currently designing systems for military agencies, government agencies, national laboratories, and for first-responder units.

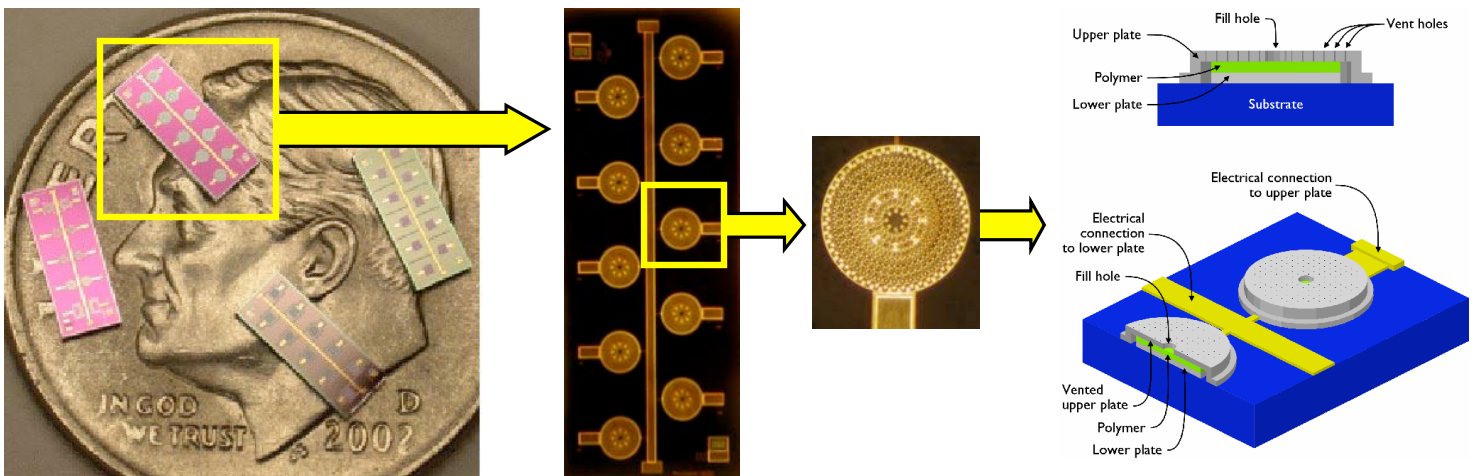
The core sensor design includes a platform on which specific chemical-sensing-polymers are placed. For each application, a series of polymers are chosen based on their affinity for detecting specific chemicals. These polymers are coated onto a sensor platform and behave like sponges to absorb chemicals from the atmosphere. When a chemical is absorbed by the sponges, a change in the ability of the platform to conduct electricity occurs and our technology helps to identify the nature and class of chemicals being detected. Our sensors are sensitive to volatile organic compounds, toxic industrial chemicals, chemical warfare agents (such as mustard and sarin gas), and other gases.

**Size** – Small as a thumb drive

**Power Consumption**  
Few  $\mu$ W/sensor  
Few mW/Prototype

**Cost** – Low due to  
Semiconductor Processing  
Techniques

**Diversity** – Many Potential  
Applications, one Platform



An illustration of our developed Chemical Sensor Chip. Each chip is extremely small in size and contains ten chemical sensor elements. Each element can be designed to sense a specific class of chemicals allowing one platform to be utilized for multiple applications.

# Chemical Detection Capabilities

Seacoast Science, Inc. proprietary sensors have been tested in controlled environmental conditions. Our sensors demonstrated a sensitivity to many Toxic Industrial Chemicals (TIC), Volatile Organic Chemicals (VOC), Explosives, and Chemical Warfare Agents (CWA). The sensors were capable of detecting many compounds in air in the parts per billion range.

## Toxic Industrial Chemicals

Analyte	Lower Limits of Detection
Carbaryl	Parts per billion
DIMP	Parts per billion
Allyl Alcohol	Parts per million
Carbon Disulphide	Parts per million
Phenol	Parts per million
Methyl Benzoate	Parts per million
Styrene Oxide	Parts per million
Acetophenone	Parts per million
Hydrogen Cyanide	Parts per thousand
Ammonia	Parts per thousand

## Volatile Chemicals

Industrial Solvent	Lower Limits of Detection
Acetone	Parts per million
Acetonitrile	Parts per million
Benzene	Parts per million
Bromobenzene	Parts per million
Ethyl acetate	Parts per million
Ethyl alcohol	Parts per million
IPA	Parts per million
Methyl Alcohol	Parts per million
Octane	Parts per million
Tetrahydrofuran	Parts per million
Toluene	Parts per million

## Explosives

Analyte	Lower Limits of Detection
DMDNB	Parts per billion
<i>o</i> -Nitrotoluene	Parts per billion
2,6-DNT	Parts per billion
2,4-DNT	Parts per billion
1-Nitropropane	Parts per million
Nitrobenzene	Parts per million

## Chemical Warfare Agents

CWA	Lower Limits of Detection
HD (Mustard)	Parts per million
GA (Tabun)	Parts per billion
GB (Sarin)	Parts per billion
GD (Soman)	Parts per billion

Tests performed at ECBC, Edgewood MD

# Advanced Prototypes and Products

Seacoast Science, Inc. has designed multiple sensor systems for custom chemical sensing applications. Our detectors can be equipped with audible and visual detection alarms, RF or cellular wireless transmission networks, digital displays, and an air pump for faster chemical detection. The systems use serial communication for easy integration.

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## SC-100

Graphic Display  
Serial Output



- SC100 Badge-Size Chemical Warfare Agent detector
- Dimensions: 3.3 x 2.7 x 1 inches
- Weight: ~ 8 ounces (220 grams) with battery
- Battery Powered: Lithium-ion or 2 AAA alkaline
- Power consumption: ~ 25 mW at 60 samples/min
- ppb sensitivity and RS-485 data output

## SC-100B

Graphic Display  
Wireless Capabilities



- VOC detector with display and radio transmission
- Dimensions: 4.7 x 3.2 x 2.2 inches
- Weight: ~ 16 ounces (450 grams) with battery
- Battery Powered: Lithium-ion or 3 AA alkaline
- Power consumption: ~ 300 mW at 60 samples/min
- Operating temp.: 0-70°C
- ppb sensitivity and RS-485 data output

## SC-EVLU

Evaluation Platform  
Core Technology



- MEMS-based chemicapacitor sensor platform
- Used for sensor evaluations and custom applications
- Dimensions: 1.1 x 2.7 x 0.9 inches
- Weight: ~2 ounces (50g)
- Power consumption ~ 160 mW

## SC-200

Graphic Display  
Sensing Wand



- Weight: 21 ounces
- Air pump
- Wireless capabilities and RS-485 data output
- Battery Powered: Lithium-ion or 9V alkaline
- ppb sensitivity and 5 second start-up time

## SC-210

Base Assembly  
Evaluation Platform



- 1.9 x 2.5 x 0.5 inch
- Weight: 1 oz, ppb sensitivity
- Battery Powered: Lithium-ion
- Flash Memory
- Bluetooth Capable

## SC-210

Wireless Chemical  
Sensing System



- Air Pump
- Weight: 1 oz, ppb sensitivity
- Battery Powered: Lithium-ion
- Bluetooth enabled PDA for data logging
- Ruggedized Case
- Modular design

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