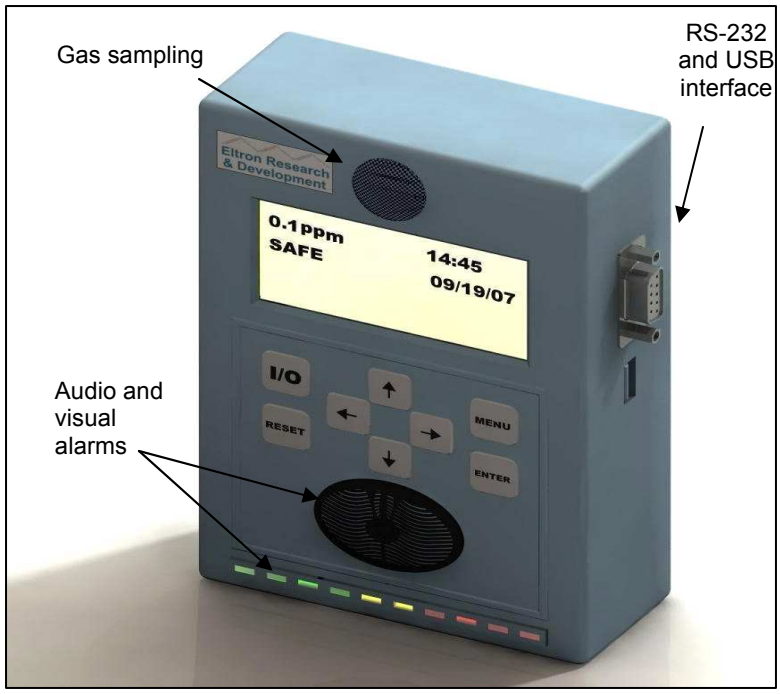
Technology Readiness Level: 4
Component and/or Breadboard Validation in Laboratory Environment

Eltron Research & Development

Tech Brief

Formaldehyde Sensor for Environmental & Industrial Monitoring



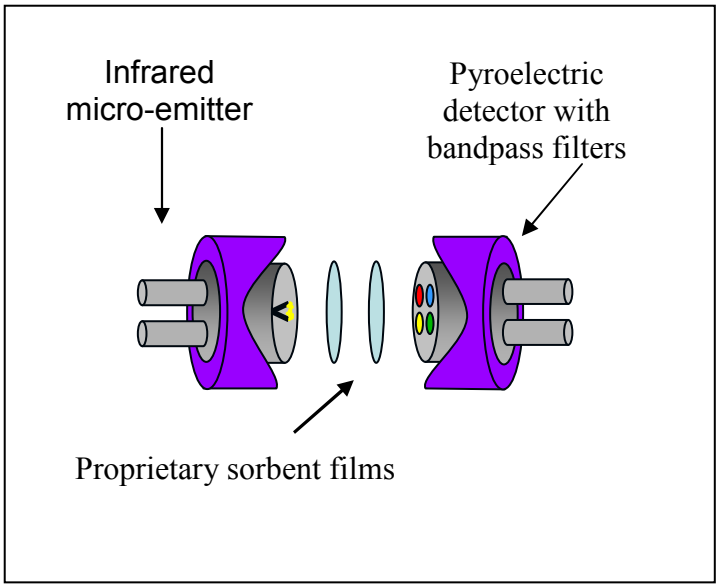
Portable formaldehyde sensor prototype (conceptual rendering).

Eltron Research & Development is developing prototype sensors for measuring the concentration of formaldehyde vapor continuously, in real-time. Formaldehyde is used in a variety of products such as particle board and foam insulation. It is also a common building block for the synthesis of resins and plastics. While a useful chemical compound, formaldehyde poses multiple, serious health risks. It is a known human carcinogen. Exposure causes severe irritation to the eyes, nose, and throat.

Current detection methods are often far from optimal. They rely on expensive equipment or costly, off-site analysis. In addition, on-site detection methods use badges that do not provide real time data. Present portable systems use non-selective electrochemical sensors that are prone to interferences and failures, or wet chemical colorimetric methods that require significant reagent manipulation.

Eltron's Solution

Eltron's approach involves the preconcentration of formaldehyde from the atmosphere onto proprietary sorbent films. A Non Dispersive InfraRed (NDIR) detection scheme is used to monitor formaldehyde adsorbed on the film. The characteristic infrared absorptions of formaldehyde are used for selective detection, in a range from many ppm to very low concentrations (<50 ppb). Eltron's technology can be implemented in both portable, handheld instruments and fixed stations in industrial settings. A central control system using wireless communications can be used to monitor many sensors located throughout a facility.



Infrared sensor components.

Features include:

- Range 0-20 ppm
- Accuracy ± 10% of reading
- Resolution 0.01 ppm
- Limit of detection (LOD) < 0.05 ppm (50 ppb)
- This encompasses both the OSHA permissible exposure limit of 0.75 ppm (8 hr. TWA) and short-term exposure limit of 2 ppm (15 min.)
- Response times of 15 seconds (20 ppm) to 11 minutes (50 ppb)
- Compatible with 4-20 mA and other standard operational modes
- Rechargeable lithium ion battery
- Battery life: 8 hours
- RS-232 and/or USB interface for data downloading

Stage of Development
A prototype sensor has been completed.

Contact Us

To discuss the possibility of entering into a business relationship with Eltron, contact the Business Development Group at business@eltronresearch.com.

Eltron Research & Development

Eltron Research & Development Inc.
Eltron Research & Development Inc. commercializes novel technologies involving advanced materials, energy, water and environmental systems.

4600 Nautilus Court South | Boulder, CO 80301 | Phone: 303.530.0263 | www.eltronresearch.com