

Mercaptan Detection

Defiant Technologies developed a system that would accept a second party sensor operating in series with the Defiant SAW sensor. In addition, Defiant developed the means to collect mercaptans on our tortuous path preconcentrator and retain them on our LIGA GC column. While most systems we design can continue sampling the ambient analyte containing air and use it as the carrier gas, the mercaptan system did require a clean air carrier gas for consistent operation. The concentration was provided by a pre calibrated permeation source.

The GC is a 2 meter LIGA column coated with a modified PDMS stationary phase. The GC flow rate is approximately 4mL/min and the GC was ramped from 45 °C to 55 °C at 10 °C/min. The carrier gas is clean air. The sample was collected for 60 seconds.

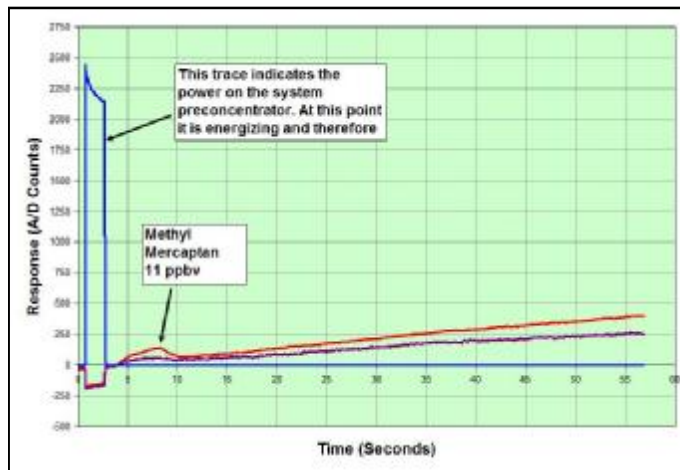


Figure 1: 11ppbv methyl mercaptan retained on a modified PDMS stationary phase.



Figure 2: LEFT. Tortuous path micro preconcentrator. The top portion of the picture shows the integrated resistive heater. The bottom shows the tortuous features used to enhance retention and uptake.

Special points of interest:

- Detection of mercaptans in air samples
- Air is the carrier gas, no need for specialty gases.
- 2 minute cycle time for PPB level detection of mercaptans

JP-10 Detection

On request, Defiant can adapt its systems to detect your chemicals of interest. Figure 3 shows data from our hand held system detecting JP-10 in under 2 minutes. The application for JP-10 detection is worker safety. Our portfolio of devices and materials can be applied to many applications. This test was performed on a 1 meter LIGA column coated with PDMS. The temperature was ramped from 60 °C to 90 °C at 30 °C/min. The carrier gas is ambient air. The sample was collected for 60 seconds.

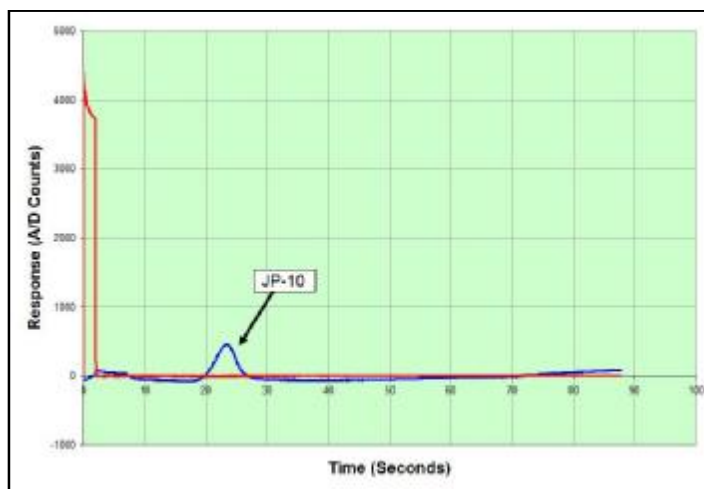


Figure 3: This system was modified to detect exo-tetrahydrodicyclopentadiene commonly called JP-10.

Special points of interest:

- Detection of JP-10 in air
- Air is the carrier gas, no need for specialty gases.
- 2 minute cycle time

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