

US Pat. No.: 7,697,134

Technology Readiness Level: 4

Basic technological components are integrated to establish that the pieces will work together

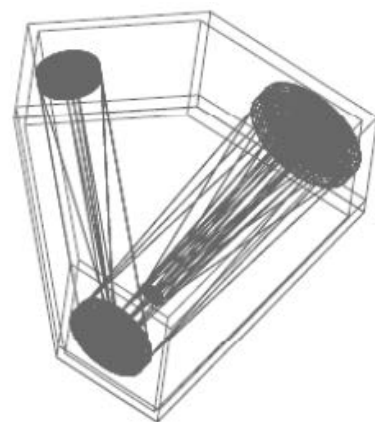
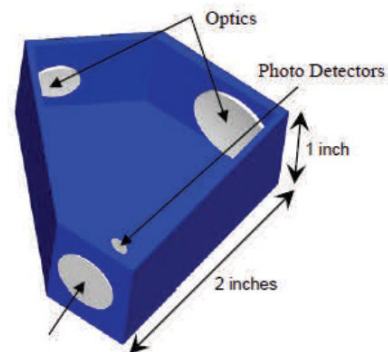
Correlation spectrometers measure trace amounts of a chemical in the presence of many other chemicals by comparing the light transmission of a sample to a known reference. Sandia National Laboratories has developed a correlation spectrometer capable of determining the concentration of a target compound in a sample.

Working for the U.S. Consumer Product Safety Commission, Sandia optical engineers created a new instrument for measuring trace amounts of chemicals like methane or carbon monoxide.

The spectrometer encodes dozens of reference signals onto a compact disk, alleviating the need to port around reference gas samples or run samples to a lab for gas chromatography. The disk-encoded correlation spectrometer enables rapid, high confidence point-of-service measurements of trace gases.

The spectrometer can measure the transmission spectrum from a given sample of gas using infrared light. The spectrometer can detect the transmission or emission spectra in any system where multiple species are present in a known volume.

In contrast to many conventional spectrometers, the SNL spectrometer is simple and can be miniaturized.



TECHNICAL BENEFITS

- Optimized for infrared chemical signature detection
- Eigen-spectra encoded on a rotating mask enables lock-in detection of gas concentration
- Ideal for detection where other gases interfere and spectral lines are not fully resolved

INDUSTRIES & APPLICATIONS

- Consumer furnace safety: carbon monoxide testing
- Gas pipeline safety methane sensing
- Industrial processing monitoring
- Safety: hazardous gas monitoring
- Environment: air quality/pollution, greenhouse gases