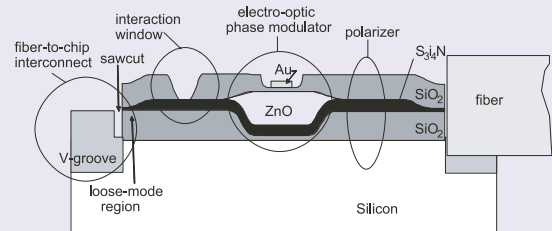
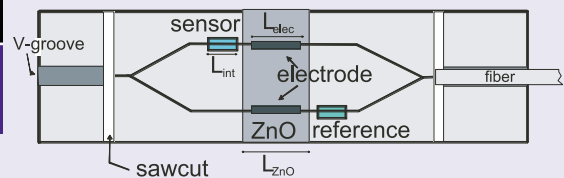
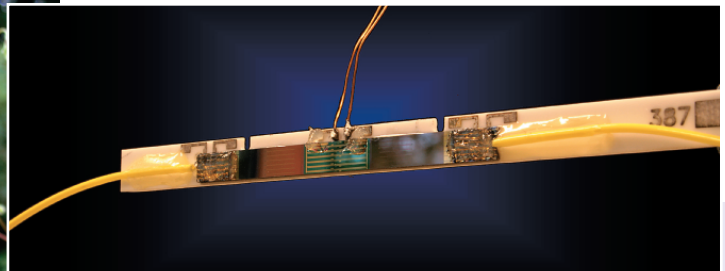


A solution for:

# Sensitive Integrated Optical Sensor



## Measurement principle

The SIOS incorporates a new optical chip, containing multiple Mach-Zehnder Interferometers. The sensing volume on the Integrated Optical Circuit contains a gas-specific absorbent or a bioactive component which acts as selective sensor material. Its index of refraction is a function of the concentration. This principle has inherent advantages of very high sensitivity and low temperature dependence.

## Product description

The SIOS is an extremely sensitive biochemical sensor capable of on-line monitoring of chemical and/or biological parameters. The involved high-tech optical chip enables multiplexing, therefore more parameters can be monitored simultaneously. Unique features of the SIOS technology provide a very compact and portable biosensor which is highly reliable and cost efficient.

## Typical application fields

	Selective chemo-optical interface layer		Without interface layer
	"polymers"	Specials (anti-body protein)	2-component mixture
Species	% RH, O <sub>2</sub> , CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>x</sub> , etc...	Toxic gasses, incapacitating gasses, biological agents, etc...	C <sub>2</sub> H <sub>5</sub> OH - CH <sub>3</sub> OH, C <sub>2</sub> H <sub>5</sub> OH - C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub> , etc...
Market	Meteorology Environmental control	Defense industry	Agriculture Medical diagnostics Health control Process control

## Applications

- Food industry:
  - antibiotics in milk, salmonella in chicken and eggs, hormones in meat, bacteria in fish
- Health care applications:
  - tuberculosis screening, water testing (legionella, lead), viruses (HIV), SARS
- Veterinary applications:
  - hormones in food, Mouth and Foot disease, Creutzfeldt Jacobs
- Military and homeland defense applications:
  - detection of poison gasses, air pollution detection

## Features

- Multiple detection - Portable and online measurements -
- Linear sensor output - Compact package - Fast response (approx. 1Hz) - Large dynamic range (>106) -
- Temperature insensitive - Extreme insensitivity to EMI

design and manufactured by:

## Lionix BV

Lionix is a leading provider in development and small to high volume production of leveraging and innovative products based on microsystem technology and MEMS. Our core technologies are integrated optics and microfluidics.

Lionix' customers operate in telecom, industrial process control, life sciences and space markets and include OEM's, multinationals, VC start-up companies as well as research institutions from around the world.

Lionix offers design for manufacturing and horizontal integration by partnering with MEMS/MST foundries and suppliers of complementary technologies. Cooperations are based on subcontracting, licensing of IP or joint ventures.



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## Optisense BV

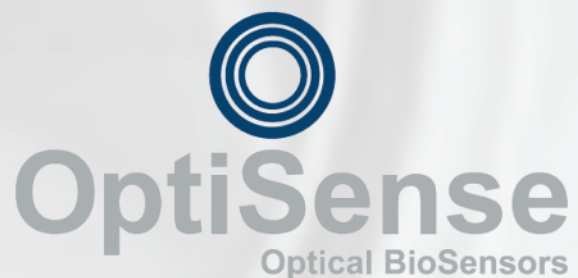
Optisense BV, a subsidiary of Investments society de Brittenburg NV, owns the rights to a highly sensitive optical biosensor called SIOS (Highly Sensitive Integrated Optical Sensor). SIOS can detect multiple bio/chemical materials and consists of an optical sensor chip, software and electronics and an application specific selective layer.

Compared to traditional detection methods for bio/chemical materials (bacteria, viruses, (bio) chemical agents) the SIOS technology offers some unique features with high commercial value. The most important differentiating features of SIOS are:

- highly sensitive, even to very small concentrations
- provides direct test results (real time response vs. laboratory tests, etc)
- can be easily integrated into a small, mobile ("point of care") test device
- can be developed for the detection of various bio/chemical materials
- can be used multiple times and be recycled: low cost per detection test

Based on these unique features the patented SIOS technology has a large commercial potential in a wide range of markets such as food industry, health care, veterinary, defense and aerospace. For each specific SIOS application Optisense can develop an application specific selective layer and sensor.

The unique features of the SIOS technology provide a highly reliable, cost efficient and practical biosensor where alternative technologies are still very expensive and require laboratory analysis to produce results.



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