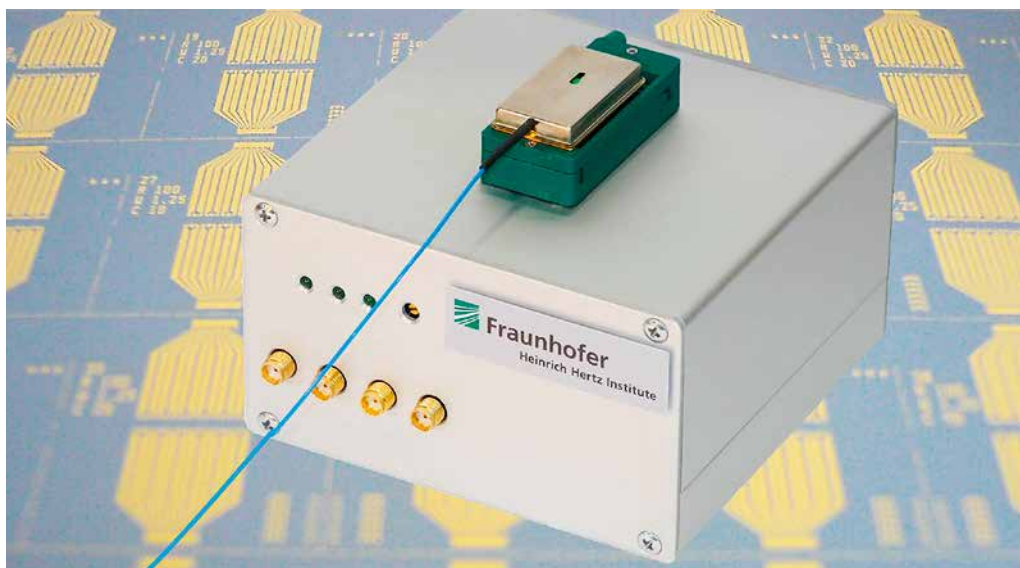


# OPTICAL MULTI-SENSOR

## AT A GLANCE

- Real-time refractometry
- Label-free multi-parameter analysis

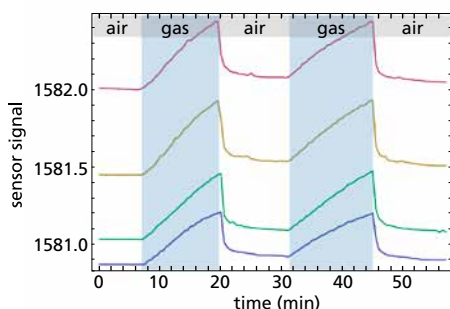


## Features

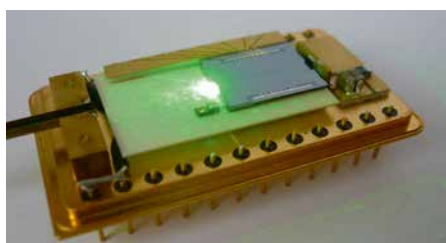
- Real-time refractive index measurements
- Label-free analysis of substances
- On-chip sensor multiplexing
- Cost-efficient silicon-based chip technology

## Applications

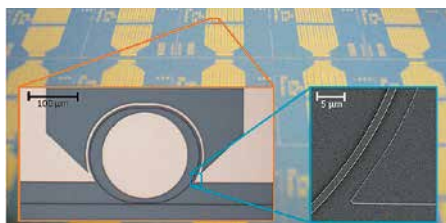
- Medical diagnostics (point-of-care)
- Inline process control
- Food and drinking water control
- Detection of hazardous substances



Demonstration: multiplexing of 4 sensors



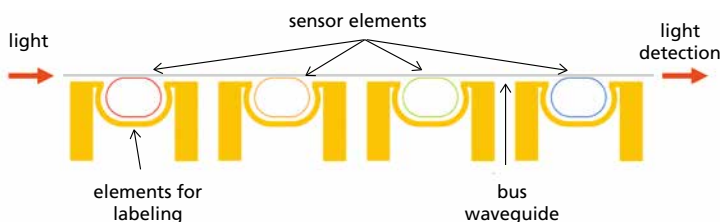
Demonstration module



Wafer with sensor chips

## Specifications

- Multiplexing of up to 100 sensor elements per chip
- Operating as refractometer:
  - continuous measurement
  - measuring range: 1,000000 - 1,800000 RI
  - resolution: < 0,000003 RI
- Operating as label-free biosensor:
  - limit of detection: < 30 ng/mL (proteins)



## Technical Background

- Measurement of refractive index via shift of optical resonances
- Cascading of sensor elements: multiplexing enables multi-parameter analysis
- Functionalization of individual sensor elements enables specific detection

## The Fraunhofer HHI

One of the prime research and development foci of the Fraunhofer Heinrich Hertz Institute lies in photonic networks, components and systems and their application in fields such as digital media.

## Contact

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