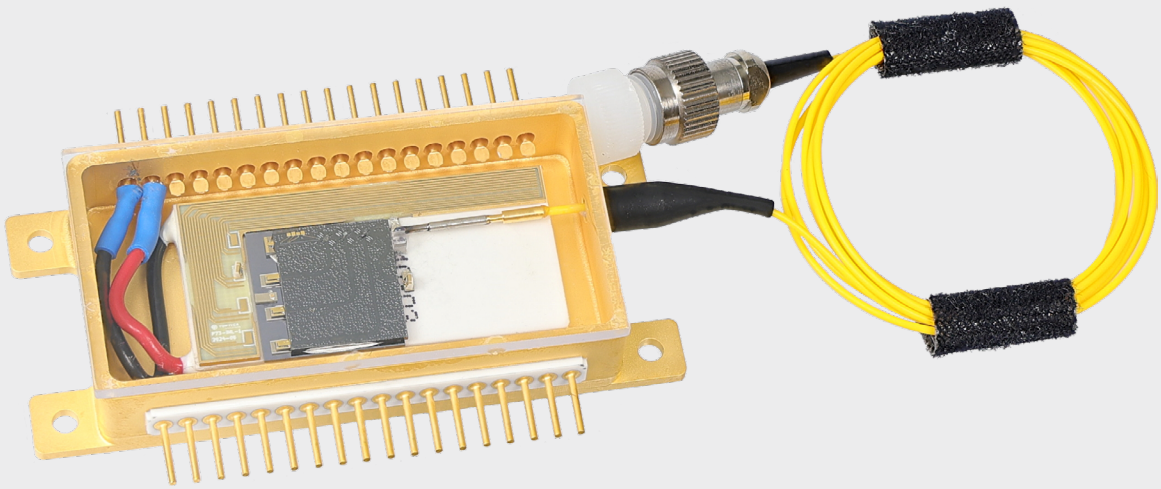
MULTI LAMBDA SOURCE

PolyChrome Berlin
Photonics for Sensing



LIGHT SOURCES

Modern fluorescence microscopy and flow cytrometry, which also allow three-dimensional high-resolution images of microscopic samples, are inconceivable without lasers. Today, these methods are used extensively in biological and medical application.

Laser source

Multi-lambda laser source
Multi-lambda laser sources are increasingly used in sensing, for biological or medical investigations, e.g. in fluorescence microscopy, blood analysis and flow cytometry, which also includes three-dimensional high-resolution images. Another application is in the consumer area, e.g. image display.

Absolute-referenced laser source
The stable reference wavelength of a laser is required for the self-calibration of spectroscopic and interferometric measurement methods.

We develop integrated multi-lambda sources on PolyBoard integration platform.

Technical Informations

- NIR-source:
  805 / 960 / 995 / 1586 nm
- RGB-source:
  450 / 530 / 650 nm

Applications

- Blood analysis
- Fluorescence spectroscopy
- Spectroscopy
- Interferometry

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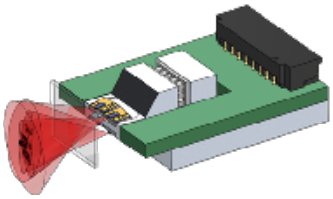
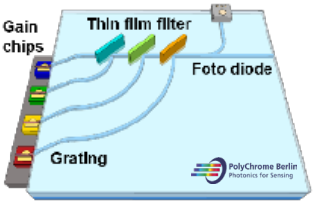
APPLICATIONS



conventional version



hybrid integrated version - PolyBoard

Blood analysis

Problem:
Blood tests are time-consuming and costly, in many cases the blood sample is taken in a doctor's surgery and the diagnosis has to be carried out in a laboratory.

Solution:
Infrared spectroscopy with multiple emitters of different wavelengths enables rapid blood analysis in a non-invasive procedure.

Further applications:
Fluorescence microscopy

Markets:
Medical technology (diagnostics for doctors (initially) and patients (in the future)

Absolute-referenced laser

Problem:
The stable reference wavelength of a laser is often required for the self-calibration of spectroscopic and interferometric measurement methods. Until now, helium-neon lasers have been used for this purpose, for example. In contrast, semiconductor lasers have the advantage that they are both smaller and more robust and also require less maintenance. However, they exhibit an undesirable drift in emission wavelengths over the course of their operating time.

Solution:
A stable and spectrally narrow-band element (e.g. iodine cell, caesium cell) can be used to control the laser wavelength in a stable manner. Conventional construction techniques are already used for this, but they are sensitive, large and expensive. A setup using PolyChrome technology makes it possible to integrate such elements in a compact module.

Markets: Spectroscopy (analytics) and interferometry (metrology)

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