Spectrophotometer Chip



Overview

Unlike traditional bulky, costly benchtop spectrometers, integrated photonics promises miniaturized, rugged, and low-cost spectrometer-on-a-chip modules with broad application prospects ranging from communications to medical imaging. Erlangen, Germany: The nanoSPECTRAL chip is a chip-size spectrometer based on the nanoSPECTRAL technology developed at the Fraunhofer Institute for Integrated Circuits IIS. This chip offers an innovative solution for spectral analyses, making it possible to measure the optical spectrum of a wide. Optical spectroscopy in the near-infrared (NIR) or visible spectra offers a simple analytical method for characterizing materials in a wide range of applications. However, the cost and size of suitable equipment put the technology out of reach of emerging opportunities, particularly in mobile and. A new AI-powered chip from UC Davis can analyze light and chemicals using a device tiny enough to fit almost anywhere. By combining smart silicon sensors with machine learning, it achieves lab-style spectral analysis without the bulky equipment. The adoption of a newly designed optical system has achieved a remarkably small size, less than half the volume of the previous mini-spectrometer MS series (C10988MA-01).



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Article Content

Single-Chip Spectrometers | DigiKey

A new AI-powered chip from UC Davis can analyze light and chemicals using a device tiny enough to fit almost anywhere.

Miniaturized on-chip spectrometer enabled by

Here we present a computational on-chip spectrometer using electrochromic filter-based computational spectral units that can be

High-Resolution and Broad-Band On-Chip Optical

This paper proposes and demonstrates a silicon photonic spectrometer beyond 1.55 μm (extending to 2-μm), featuring a high resolution

Spectral Sensing Technology | ams OSRAM

Chip-scale spectral sensing from ams OSRAM makes this possible. This technology can be used to measure an ever-increasing range of conditions from the

Mini-spectrometer micro series C12666MA

A demonstration module with a built-in the mini-spectrometer Micro series was used to measure the spectrum of color sample. Because the Micro series is small, it

nanoSPECTRAL chip: a miniature cost-effective spectrometer

This chip offers an innovative solution for spectral analyses, making it possible to measure the optical spectrum of a wide variety of objects quickly and precisely – both in transmission

Integrated photonic spectrometers: a critical review

Unlike traditional bulky, costly benchtop spectrometers, integrated photonics promises miniaturized, rugged, and low-cost spectrometer-on-a-chip modules with broad application prospects

Chip-scale sensor for spectroscopic metrology

Here, we present an integrated reconstructive spectrometer that enables near-infrared (NIR) spectroscopic metrology, and demonstrate a fully

Rockley Photonics Unveils Next-Generation, Higher-Density Laser ...

With this breakthrough in the mTP of silicon-photonics-based lasers, Rockley has dramatically increased the laser density of its photonics integrated circuits (PICs) for biosensing,

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Next-Generation, Higher-Density Laser Spectrophotometer Chip for ...

Rockley Photonics Unveils Next-Generation, Higher-Density Laser Spectrophotometer Chip for Wearable Health Monitoring • Groundbreaking achievement in micro-transfer printing

Chip-scale mid-infrared digitalized computational spectrometer

While the chip-scale spectrometers are widely investigated using silicon photonics technology, few research have addressed the need for a mid-infrared (MIR) integrated chip-scale

UV-Vis-NIR Spectrophotometers

By irradiating a light on a sample, the spectrophotometer can measure the intensity of light passing through it and compare it to the intensity of the incident light. In doing so, UV-Vis-NIR

Scalable on-chip diffractive speckle spectrometer with high spectral ...

The chip-scale integrated spectrometers are opening new avenues for a much wider range of applications than their conventional benchtop counterparts. While spectral reconstruction

See how this homemade spectrometer analyzes substances with an

Materials, when exposed to light, will reflect or absorb certain portions of the electromagnetic spectrum that can give valuable information about their chemical or physical

An in-line spectrophotometer on a centrifugal microfluidic platform for ...

We demonstrated an inline spectrophotometer on centrifugal microfluidics based on the PEDD method, and used it for real-time protein determination and calibration on a chip.

Rockley Photonics Unveils Next-Generation, Higher

This groundbreaking achievement is expected to allow Rockley to further increase the density and reduce the size of its high-density

An Arduino-powered Microplate Spectrophotometer : 16 Steps

An Arduino-powered Microplate Spectrophotometer: Spectrophotometers are common pieces of equipment in a bioscience lab. They perform one simple function - to measure how much light a

Broadband on-chip single-photon spectrometer

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Single photon devices are needed for many future technologies, but resolving the color of single photons in a compact architecture is still a challenge. The authors present a broadband, chip

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