Chip-level Spectrometer

Overview

Chip-scale spectral sensing systems enable many existing and emerging applications, such as color picking, authentication and spectral analysis of substances, materials, foods and fluids. The integration of nanophotonic optical phased arrays (OPA) with alkali vapor cells has the potential to enhance the performance of chip-scale atomic systems by enabling novel methods for beam shaping and active alignment in atomic spectroscopy. In this work, we present the first demonstration of. 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. theory27. Here we present a silicon on-chip digital Fourier transform spectrometer consisting of.

Article Content

Chip-scale atomic wave-meter enabled by machine learning

Our approach provides a random wave-meter on chip device with accurate calibration and enhanced robustness against environmental fluctuations. The demonstrated device is expected ...

Chip-scale mid-infrared digitalized computational spectrometer ...

In this paper, we present a chip-scale MIR digitalized MEMS-enabled computational spectrometer (d-McS) on the SOI platform using silicon photonics MEMS technology and ...

High-resolution on-chip Fourier transform spectrometer based on ...

Chip-level spectrometers provide a stable and cost-effective solution for spectral analysis in various applications. Here we present a silicon on-chip digital Fourier transform spectrometer consisting of ...

Single-Chip Spectrometers | DigiKey

Single-chip multi-spectral analyzers let developers build low-cost, portable spectrometers able to address a growing array of applications.

Chip-scale atomic spectrometer with silicon nitride optical phased ...

In conclusion, we have demonstrated a chip-scale saturated absorption spectrometer enabled by a silicon nitride optical phased array, with the MEMS vapor cell integrated directly on the ...

Spectral Sensing Technology | ams OSRAM

Chip-scale spectral sensing systems enable many existing and emerging applications, such as color picking, authentication and spectral analysis of substances, materials, foods and fluids. These ...

Single-Shot on-Chip Diffractive Speckle Spectrometer with High ...

In this work, a single-shot spectrometer is demonstrated based on all passive on-chip diffractive metasurfaces which is able to create the speckle pattern with richness of spectral information.

Wavelength-scale noise-resistant on-chip spectrometer

Here, we demonstrate a wavelength-scale, CMOS-compatible on-chip spectrometer that overcomes this challenge by exploiting inverse-designed quasinormal modes in a complex photonic ...

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

The foundry-fabricated spectrometer was fully compatible with the standard silicon photonic fabrication process. The proposed speckle spectrometer based on diffractive metasurfaces achieves a high ...

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.

Chip-scale atomic spectrometer with silicon nitride ...

In conclusion, we have demonstrated a chip-scale saturated absorption spectrometer enabled by a silicon nitride optical phased array, with the MEMS ...

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