

Calibrating wavelength-dependent speckle patterns enables a multi-mode optical fiber to function as a spectrometer that is compact, light-weight, low cost, and provides high resolution with low loss.

One of the key devices for the MDM system is the mode multiplexer. The all-fiber photonics lantern, with its advantages of low loss and minimal crosstalk, presents an attractive solution.

This work proposes a solution based on the combination of a frequency comb source and a fibre spectrometer, exploiting all-fibre technology, that is inherently low-cost, lightweight and may lead to ...

The studies presented above demonstrate that multimode optical fibers can be used as high-resolution, general purpose spectrometers. The spectral-to-spatial mapping is provided by interference of the ...

In this work, we propose and demonstrate a high-performance on-chip passive spectrometer leveraging advanced multimode photonics.

In conclusion, by integrating a commercially available wavelength division multiplexer with multimode optical fibers, we have realized an all-fiber spectrometer with very broad bandwidth and fine spectral ...

We report an integrated photonic spectrometer that achieves high performance with minimal component complexity by combining imaging of light propagation patterns in multi-mode ...

This invention is used in analytical chemistry, biochemical sensing, material analysis, optical communication, and medical applications.

Here we introduce a compact spectrometer based on multimode interference (MMI) that simultaneously achieves high resolving power of  $R > 10^4$  ( $R > 10^5$ ) in the visible (near-infrared) ...

In this paper, we theoretically and experimentally demonstrate an AI-assisted MMF spectrometer, and examine the limits of the method. The resolution of the spectrometer reached 0.1 ...

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