EIT Opto-Routing

Intelligent Planar Waveguide

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Overview

Optical planar waveguide sensors, able to detect and process information from the environment in a fast, cost-effective, and remote fashion, are of great interest currently in different application areas including security, metrology, automotive, aerospace, consumer. Traditionally, high-performance communication systems were based on rectangular waveguides (RWGs) to guide high-frequency signals. Newer, efficient RWG-like systems are now available with the added value of low cost, low volume and low weight, together with compactness and ease of manufacture. However, the existing DONNs based on free-space diffractive optical elements are bulky and unsteady. FIMMPROP is probably the most widely used propagation tool for the modelling of silicon photonics: rigorous (no slowly varying approximation), fully vectorial, offering wide angle capability and very high design flexibility. Integrated optical waveguide systems have emerged as foundational components for next-generation sensing technologies, owing to their exceptional miniaturization, high integration density, and compatibility with scalable planar fabrication.

Planar-scalable interferometric design enabled by superlattice

Integrated optical waveguide systems have emerged as foundational components for next-generation sensing technologies, owing to their exceptional miniaturization, high integration density, and

Chapter 2. Planar optical waveguides

Abstract This chapter reviews planar optical waveguides, which are the key devices to construct integrated optical circuits and semiconductor lasers.

Optical meta-waveguides for integrated photonics and beyond

Recent years have witnessed substantial potential in allying meta-optics with diverse waveguide platforms to enable exotic manipulation of guided light signals. This review cataloged

Substrate Integrated Waveguide (SIW) Based Circuits and Systems

The upcoming generation of guided-wave structure, Substrate Integrated Waveguide (SIW) technology, has attracted wide interest. The principle of SIWs is to convert nonplanar

Wideband Reconfigurable Multifunctional Analogue Photonic Chip

In this paper, an architecture and tuning mechanisms of reconfigurable multifunctional fractional-order analogue photonic chip are proposed and theoretically demonstrated, using a single

A Fully Planar Slow-wave Substrate Integrated

The authors propose a new metamaterial-inspired substrate integrated waveguide (SIW) that utilises broadside-coupled complementary split ring

Planar Waveguides: The Future of Photonics

At the heart of this evolution are planar waveguides, structures that guide light along a specific path on a flat substrate. In this article, we will explore the pivotal role of planar waveguides in

A Fully Programmable On-Chip Planar Waveguide for Machine Learning

We introduce a device containing a planar waveguide whose spatial refractive index profile n(x, z) can be programmed in real time. We demonstrate use this device as an optical neural network.

Planar Waveguide

Planar waveguide lasers are a special class of laser where light is confined to a waveguide. They have distinctive advantages that include high optical gains, low laser thresholds, narrow linewidths in the

(PDF) Planar optical waveguides for sensing applications

Planar optical waveguides formed by ion-exchange in glass are sensitive to changes in parameters such as: refractive index, absorption, and light

Hybrid Planar

These systems are based on substrate-integrated waveguides (SIWs), empty SIW (ESIW) and their multiple variations. This book presents successful examples of

Planar Waveguides , Photon Design

FIMMWAVE supports a large number of complementary mode solvers, which allows it to solve a large variety of waveguides which may be made of any material and

APN-24-108006 1.

In this study, we propose a planar-waveguide integrated diffractive neural network chip architecture. The three diffractive layers are engraved on the same side of a quartz wafer.

Planar Waveguide Devices for Communication and

The paper reviews progress and future prospects of two kinds of planar waveguide devices; they are (a) silica and silicon photonics

Compact planar-waveguide integrated diffractive optical neural

Request PDF , On Jan 9, 2025, Jianan Feng and others published Compact planar-waveguide integrated diffractive optical neural network chip , Find, read and cite all the research you need on

422 Million intrinsic quality factor planar integrated all-waveguide

Integrated photonic all-waveguide resonators are a critical component in many future applications. Here the authors develop an optimized photonic all-waveguide resonator with an ultra

Planar Waveguide

PlanarWaveguidesWaveguidesformedonaflatsubstrateare called planarwaveguides. These are typically made by stepwise deposition of films of dielectric materials (typically glass). The waveguide

Wideband Reconfigurable Multifunctional Analogue Photonic Chip

Wideband reconfigurable multifunctional analogue photonic chip using planar waveguides is proposed and analysed. A variety of planar Bragg gratings (PBGs) are designed and optimised to

Optical Planar Waveguide Sensor with Integrated

In this paper, we present an optical temperature sensor having a planar waveguide architecture and including two luminescent layers with matched

Photodetectors integrating waveguides and

The second involves the photodetectors of different wavelengths that integrate waveguides, ranging from ultraviolet to infrared. These hybrid

Planar Optical Waveguides , Springer Nature Link

Recent advances in opto-electronics and electro-optics have opened the infrared and visible part of the electromagnetic spectrum for communications and general data processing applications. Planar

Planar waveguide , Description, Example & Application

Planar waveguides are typically made from materials such as silica, silicon, polymers, or other semiconductors. These materials have a high refractive index, which allows them to confine

First-principle design and analysis of photonic-

In this paper, novel single-mode (SM) photonic-crystal planar waveguides (PCPW) and linear arrays have been proposed and systematically studied. Advanced elliptic features are

Coplanar Waveguide

Types of coplanar waveguide "Classic" coplanar waveguide (CPW) is formed from a conductor separated from a pair of groundplanes, all on the same plane, atop a dielectric medium. In the ideal

Planar waveguide devices (Chapter 5)

How to analyze the generalized planar guided waves has already been discussed in Section 1.2.5. A distinct feature of planar waveguide devices is the utilization of the diffraction, focusing and

The composite planar waveguide structure consisting of the linearly

The new type of the composite planar waveguide characterized by unique optical properties caused by the special selection of the waveguide layers is described. The interface

Planar Waveguide , Springer Nature Link

However,planarlayer-typedielectricandmetal-dielectricwaveguides(likeDLandPSDL) are infinite in the cross section so that for them these results cannot be applied and the

Low losses Er3+-doped flexible planar waveguide:

Toward an all-glass

One fundamental brick to obtain this features extension is the fabrication of low loss inorganic active planar waveguides on flexible glass substrate. Here, we present the preliminary

Waveguide Cell With Water Filling for Passive Intermodulation

This work presents a novel miniaturized waveguide cell with water filling for passive intermodulation (PIM) localization on planar circuits. The planar circuit as printed circuit board (PCB) is excited in a

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