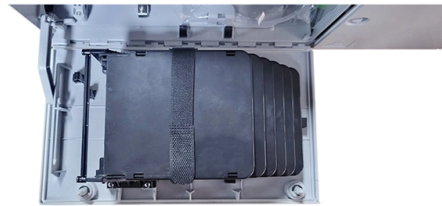


Comparison of Planar Optical Waveguide Intelligent Type Price and Performance



Overview

In recent years, the technology of waveguide-based planar solar concentrators has been getting more attention in the Concentrated Photovoltaics (CPV) sector due to its compact design and performance versatility and its extended potential applicability from large power plants to built environments, such as Building Integrated Photovoltaics (BIPV). W. ••Review on waveguide-based Planar Light Concentrator (PLC) technology with reference of optics design and optical materials. ••Covered material and systems design specifications for geometric, luminescent, and diffraction based PLC. ••Summarized and tabulated different waveguide-based PLC technologies and its performance. ••Discussed future prospects, practical impacts and challenges in the context of Building Integrated Photovoltaics.

Planar waveguide
Planar light concentrator
Solar concentrator
Geometric optics
Diffraction optics
Luminescent solar concentrators
Concentrated photovoltaics
Building integrated photovoltaics

Being the most abundant natural source of energy, solar energy is considered the future of the global renewable energy sector. However, unlike direct utilisation of solar energy (for example, daylighting applications), energy converted utilisation of solar energy is limited to the low energy density of input solar radiation for the required conversion, which can be either thermal or electrical. With the global urbanisation expansion, the area utilisation of these solar power conversion systems and their environmental impacts is also becoming a major concern [1, 2]. The most straightforward approach that can be adopted to address this issue is concentrating solar radiation on a finite area using techniques of optical light concentration [3, 4]. Through the ages, the designs for solar light concentration evolved from imaging optics (mirrors and lenses) [6,8] to modern planar Fresnel optics [9,10]. However, the conventional optics systems suffer from bulkiness and cost-effectiveness due to the...

Article Content

A comprehensive review on optics and optical materials for planar ...

The systematic comparison of optics and optical material design parameters, the primary results, and the merit of different waveguide-based PLC systems have been explored within this ...

Comprehensive Guide to Optical Waveguides: From Fundamentals to ...

To provide an overview of each material's characteristics, we have prepared the comparison table below. We also outline how to identify the optimal solution based on these properties. Glass-based ...

Waveguide (optics)

An optical waveguide is a physical structure that guides electromagnetic waves in the optical spectrum. Common types of optical waveguides include optical fiber waveguides, transparent dielectric ...

Recent Progress in Optical Waveguide Technologies Enabling Integration ...

In this article, we report on the recent progress made in optical waveguide technologies that is helping to achieve extremely compact and highly integrated optical devices.

The Role of Planar Waveguides in Sensing Applications

Optical sensors can be classified into two main types: fiber optic sensors and planar waveguide sensors. Planar waveguides are optical structures that confine the optical radiation in the direction of ...

Competitive Evaluation of Planar Embedded Glass and Polymer Waveguides ...

A comparative characterization was carried out on the waveguide classes to show a clear reciprocal dependence of the performance of different waveguide classes on wavelength.

Planar Waveguides – Buying Guide & Supplier List | RP Photonics

This planar waveguides buying guide provides technical background, comparison of major types, selection criteria, and an overview of suppliers.

Comparison of the Optical Planar Waveguide

The variety of fiber sensors is much higher than that based on planar waveguides, but their fabrication is much more complicated, as evidenced by the overwhelming number of theoretical works using ...

(PDF) Comparison of the Optical Planar Waveguide Sensors ...

Analytical expressions connecting the characteristics of the sensitive elements of the three types of sensors with the parameters of the grating and the corresponding waveguide.

Recent Progress in Optical Waveguide Technologies ...

In this article, we report on the recent progress made in optical waveguide technologies that is helping to achieve extremely compact and highly integrated ...

Waveguide Gratings vs Planar Waveguides: Cost Analysis

Comprehensive waveguide technology analysis covering planar and grating solutions for optical applications. Discover cost-effective manufacturing strategies and performance optimization ...

Comprehensive Guide to Optical Waveguides: From ...

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Competitive Evaluation of Planar Embedded Glass and ...

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