SINGLE BEAM SIDE DEFLECTOR, COUPLER CONTROL AND APPLICATIONS TO WAVE LENGTH DEMULTIPLEXERS AND OPTICAL ANTENNA FEEDERS

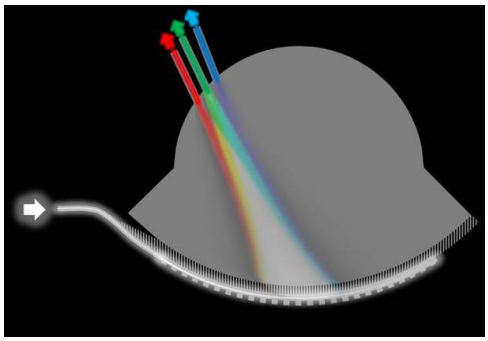
Description:

Integrated optical circuits are miniaturized optical systems made up of various components that are manufactured on wafers using deposition, material growth, and lithographic techniques similar to those used in microelectronics. By means of these techniques, channels formed by materials with different dielectric constant (waveguides or waveguides) are manufactured in the wafer that allow the light to be guided and manipulated through the plane of the wafer with low losses of optical power. On the other hand, couplers are part of the vast majority of integrated optical subsystems such as modulators, receivers, demultiplexers or filters and are therefore components of great practical application in many applications. The present invention solves the problems of current devices through a system based on a diffraction grating that efficiently couples the light, by means of diffraction, from a channel waveguide to a film waveguide that keeps the light confined in the wafer plane.

Keywords:
Integrated Photonics, Lateral Diffraction Grating, Wavelength Demultiplexer, Optical Antennas

Sectors:
ICT, Electronics

Areas:
Telecommunications, Hardware / Devices / Components, Electronics, Technological Improvements



Advantages:

The invention presents the novelty that it makes it possible to avoid power losses due to radiation out of the plane of the chip that other previous devices have. Furthermore, the present invention enables energy efficient tuning of the direction of the radiated beam in the film guide and also offers a solution for shaping its amplitude and phase. This last quality is especially useful when the invention is used to implement a wavelength demultiplexer / multiplexer since it allows the channels to be positioned dynamically by means of an electrical control signal.

Uses and Applications:

The present invention relates to the field of integrated optics. This device can be used, among other applications, to shape the light beam coupled to a film waveguide, to implement a feed for integrated optical antennas or to implement a high-performance wavelength demultiplexer device in integrated photonics.

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