

ABSTRACT

A silicon photonic integrated chip and a wavelength division multiplexer that includes at least two polarization control structures and at least one polarization-independent Mach-Zehnder interferometer on a silicon substrate are provided.

- 5 The polarization control structures include two input ports and one output port. The Mach-Zehnder interferometer includes two input ports and one optical signal output port for outputting a multiplexed optical signal. The output ports of the polarization control structures are connected to the input ports of the Mach-Zehnder interferometer. The polarization control structures have designable
- 10 bandwidths for increasing an optical bandwidth of the wavelength division multiplexer and reducing optical loss. A quantity of phase shift arms that require tuning feedback is reduced to lower overall power consumption of a device. Reliability and yields of the wavelength division multiplexer are enhanced due to a large manufacturing tolerance and good stability of the polarization control
- 15 structures.

The most illustrative figure: Figure 2