

Spectrometer on a chip: an InP-based grating demultiplexer for WDM applications at 1.5 μ m

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Abstract

We report an InP-based grating spectrometer for WDM systems operating in the 1.5 μ m fiber band. The spectrometer resolves more than 50 wavelength demultiplexed channels at 1nm spacing with a 3 \AA channel width and at least 19dB isolation between outputs. The spectrometer operation is almost independent of the state of the input polarization.

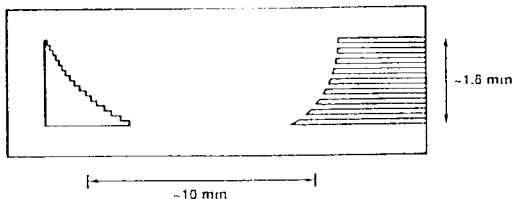


Figure 1.
Schematic representation of the InP-based spectrometer

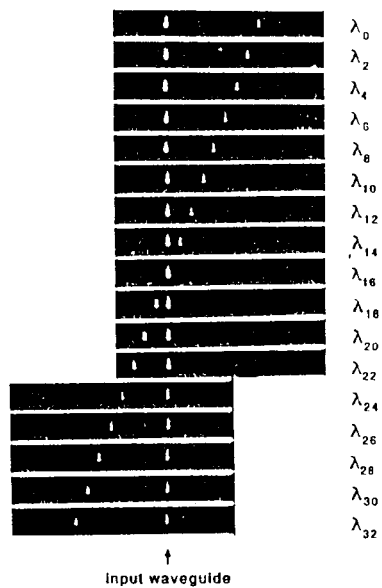


Figure 2.
Output from 16 wavelength demultiplexed channels, covering the 1.484 μ m-1.516 μ m wavelength range. Only every second channel is shown for clarity, the channel spacing being 1nm.

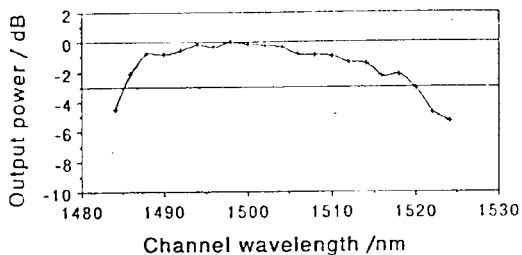


Figure 3.
Emitted power from the output channels, showing a -3dB range of 36nm.

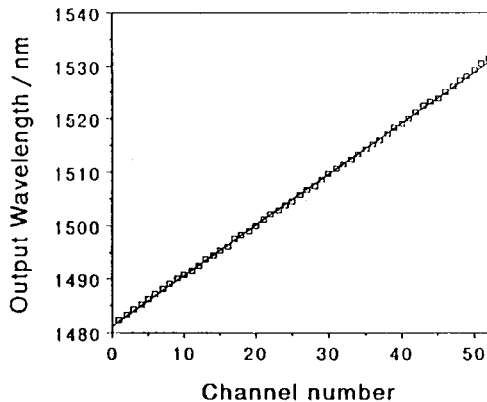


Figure 4.
Plot of output wavelength against channel number for the 52 output channels covered by the spectrometer.