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Tailored design of WDM filters in BCB embedded PhC membranes

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Abstract We propose a design strategy for wavelength division multiplexing (WDM) filters in BCB embedded photonic crystal membranes. Due to the weaker vertical confinement determined by the material embedding the whole structure, accurate tailoring of the resonant cavity and of both bus and drop waveguides is necessary, in order to guarantee the required performance of the filter for WDM applications.

Keywords Photonic crystals · Photonic crystal cavities · Photonic crystal filters

1 Introduction

Multi-channel drop filters are fundamental components for wavelength division multiplexing (WDM) and dense wavelength division multiplexing (DWDM) applications. These devices are usually realized through a cascade of different sections (Channel drop filters—CDFs) operating on a single wavelength of the WDM frame. Accurate wavelength selectivity, high drop efficiency and low insertion loss are the most important parameters of these components. Minimization of the channel spacing and device miniaturization are mandatory to guarantee an efficient use of the available spectral resources and to realize high-density integrated optical circuits. Photonic Crystal technology, with its capability of controlling the light propagation on a wavelength scale, has been repeatedly proposed as a suitable platform

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