عنوان مقاله:

A 1 × 2 Optical Power Splitter Based On Photonic Crystal Ring Resonators

محل انتشار:

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خلاصه مقاله:

we propose a 1 × 2 optical power splitter made ofring resonators and linear-defect waveguides in photoniccrystals. This structure is based on a square lattice of siliconrods with the refractive index n(1)=3.47 surrounded by air (withrefractive index n(2)=1). The broadest photonic band gap for thislattice occurs at the optimized filling ratio of r/a = 0.2. Ourproposed power splitter forms by the appropriate couplingdistance between two mirrored rings and a linear defect W1waveguide. Due to constructive interferences in ring resonatorswhich cause the intensity inside the ring builds up in overseveral round-trips, the splitting efficiency of power splitter isfound to be near %60 in each arm with a FWHM=21nm –from 1.541~1.564μm. This intensity corresponds to a hexa-poledegenerated resonant mode which its normalized frequenciesare 0.3480 and 0.3483 (a/λ). Resonant modes of the ringresonator with their corresponding .degenerated poles and thetransmission spectra are calculated using the PWE, and 2DFDTDmethods respectively

کلمات کلیدی:

photonic crystal; power splitter; ring resonator