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عنوان مقاله:

Novel Design of Optical Channel Drop Filter Based on Photonic Crystal Ring Resonators

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خلاصه مقاله:

In this paper, a new design of optical channel drop filter based on two- dimensional photonic crystal ring resonators with triangular lattice is proposed. The rods of this structure is silicon with the refractive index 3.46 and the surrounding environment is air with the refractive index of 1.The widest photonic band gap obtained is for filling ratio of r/a = 0.2. The filter's transmission spectrum is calculated using the two-dimensional (2D) finite-difference time-domain (2D-FDTD) numerical method. The simulation shows 100% dropping efficiency and suitable quality factor at 1519.4 nm wavelength achieved for this filter. Also, in this paper, we investigate parameters which have an effect on resonant wavelength and transmission spectrum in this CDF, such as refractive index of inner rods and whole of dielectric rods of the structure. The overall size of the structure is small that is 14 μm × 14μm which is suitable for .photonic integrated circuits (PIC) and optical communication network applications

کلمات کلیدی:

Photonic crystal, Ring resonator, Triangular lattice, Optical communication

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