A multichanneled filter in a photonic crystal containing coupled defects

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Abstract

Optical ¯ltering properties in a multichanneled transmission ¯lter based on one-dimensional photonic crystal containing the coupled defects are theoretically investigated. The resonant transmission peaks are designed to be located within the photonic band gap of a defect-free photonic crystal. The number of peaks is directly equal to the number of the coupled defects. The positions of resonant peaks can be tuned by varying the refractive index of the defect layer. In addition, extremely resonant peaks can be produced by adding the Bragg mirrors at the front and rear sides of the structure.

Keyword：multichanneled transmission filter, photonic crystal, coupled defect, Bragg mirror