Photonic crystal passive devices for photonic integrated circuits

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The parity of coupled localized modes in photonic crystals is not conserved.


Photonic crystal passive devices

Design of photonic crystal–based passive devices

Ideal 3dB PC splitter/combiner proposed and designed

Highly efficient PC-based multi-channel drop filter proposed and designed
S. Kim, et al., Optics Express, 12, 5518 (2004)

Photonic crystal waveguides and devices in microwave

PC-based, four-channel drop filter implemented in microwave
Photonic crystal passive devices

Higher-order resonant filter

For $a = 500$ nm, center frequency is 1550 nm


Center frequency of 193.55THz, flat bandwidth of 50GHz, ripple less than 0.3dB
Compact sensor based on photonic crystals

Strong dependence of the filter characteristics is useful in sensor application.

Collaborators

- Prof. Ikmo Park and Prof. Hanjo Lim, Ajou Univ.
  - Photonic crystal based device design
- Prof. Heonsu Jeon, Seoul National Univ.
  - Realization of photonic crystal devices