Reflective Simulation in 1D Photonic Crystals based on Defect State

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Abstract: In this paper is studied reflective simulation of laser inside defect state based on 1D photonic crystal, which was designed to central wavelength \( \lambda_c = 1550 \text{nm} \) of photonic band-gap by the reflective index and dimension parameters. Now that reflection of laser within defect state (Fabry-Perot) can be amplified light intensity therefore the dimension of defect state is decided by central wavelength of photonic band-gap in order to generate standing wave inside defect state. The laser intensity of central wavelength is amplified by multi-reflection until it can be breakthrough to output layer of photonic crystal. The result of Comsol 4.0, that use to solve this problem show fig.(a), the central wavelength of 1D photonic crystal, and fig.(b), the central wavelength is amplified by multi-reflection. The amplifier of the central wavelength depend the number of output layers.

Fig. a;

Fig. b;

The Input/Output reflection coefficient of 1D photonic crystal