

## A Connected Structure of All-Optical Logic Gate “NOT-AND”

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**Abstract :** We present a study of the transmission of the all-optical logic gate using a structure connected with a triangular photonic crystal lattice that is improved. The proposed logic gate consists of a photonic crystal nano-resonator formed by changing the size of the air holes. In addition to the simplicity, the response time is very short, and the designed nano-resonator increases the bit rate of the logic gate. The two-dimensional finite difference time domain (2DFDTD) method is used to simulate the structure; the transmission obtained is about 98% with very negligible losses. The proposed photonic crystal AND logic gate is widely used in future integrated optical microelectronics.

**Keywords :** logic gates, photonic crystals, optical integrated circuits, resonant cavities

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