SPECTRUM AND OPTICAL CONTRASTIVITY OF AN OXIDIZED COMB-LIKE SILICON PHOTONIC CRYSTAL

E.Ya. Glushko

Institute of Semiconductor Physics
(*41, Nauky Prosp., Kyiv 03028, Ukraine*)

S u m m a r y

A typical oxidized ternary photonic crystal – A/B/A/C N-periodic structure – is investigated analytically and numerically in the framework of the transfer matrix formalism. The influence of the oxidation on photonic gaps and the positions of perfect reflection areas for $(SiO_2/Si/SiO_2/Air)_N$ structure is calculated with regard for a transformation of the widths of silicon oxide layers. It is shown that the intrinsic optical contrastivity has a non-monotone behavior during the process of oxidation of silicon in the case of p-polarized electromagnetic waves. The found results will allow one to determine the optimal regimes of oxidation to obtain the needed optical properties of a photonic material.