Containing one-dimensional photonic band gap crystals

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Application of devices on the base of photonic crystals with nonlinear optical properties is promising for optical switchers and optical power limiters development.

Fullerenes have strong dependence of the refraction coefficient on the irradiation intensity in the visible and near IR spectral range. The band gap of the photonic crystal with incorporated fullerene-containing films shifts while changing the intensity of irradiation. Such systems can be used as optical power limiters or switchers and at that the speed of the switching process and the power of the control signal are the functions of nonlinear media characteristics.

In this paper using the data on fullerene nonlinear properties we present results of calculations of band gap values and nonlinear band gap shifts of fullerene-containing one-dimensional crystals.