

A diffraction grating created in diamond substrate by boron ion implantation

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Abstract

© 2017, Pleiades Publishing, Ltd. This work is devoted to new method of manufacturing of diffractive optical elements (gratings). A grating was formed in a diamond substrate by implantation with boron ions through a mask. Ion implantation led to the graphitization of diamond in unmasked regions and resulted in swelling of the irradiated layer. The formation of periodic graphitized surface microstructures on the diamond substrate was confirmed by optical, electron, and atomic force microscopy. The efficiency of operation of the obtained diffractive optical element was demonstrated by probing with He-Ne laser radiation.

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