

Research and development of technology of DOE microrelief formation on sapphire substrates

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Abstract

A method for the formation of the phase microrelief of sapphire (leucosapphire) diffractive optical elements (DOE) has been proposed and implemented. Using this method, a binary structure on a sapphire substrate was produced and investigated, this structure operates in ultraviolet range as a diffractive lens with a focal length of $f \approx 50$ mm. It is shown that sapphire is a real alternative to quartz plates and diamond-like films when used as a DOE substrate material. The parameters were chosen for the formation of a given microrelief on sapphire substrates on the basis of ion-chemical etching in Freon-14.

Keywords: DOE, on sapphire substrate, binary structure, ultraviolet range, quartz plate, Freon-14.

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