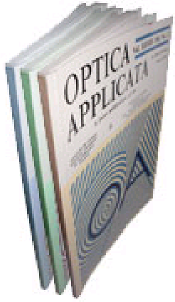

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Methods of silicon surface structurization for the purpose of the deposition of III-V epitaxial layers

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Keywords

textured silicon substrates, anisotropic etching, GaN epitaxy

Abstract

This paper presents the results of the texturing of silicon substrates with various crystallographic orientations by anisotropic etching, both in a maskless process and in a process employing specially shaped mask patterns. Several etching solutions based on KOH and KOH with isopropanol, enabling a uniform texturing of silicon substrates with selected orientations in maskless process, were tested in order to find an optimal composition. We proposed a texturing process with the use of an appropriate oxide mask, which allowed the analysis of the epitaxy process in terms of orientation and inclination of sidewalls and edges of resultant structures. The structured substrate can be used for the investigation of growth of GaN epitxial layers on silicon substrates.

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