

Title (en)

CONTROL OF CRYSTAL ANISOTROPY FOR PEROVSKITE OXIDES ON SEMICONDUCTOR-BASED SUBSTRATES

Title (de)

STEUERUNG DER KRISTRALLANISOTROPIE FÜR PEROVSKITOXIDE AUF HALBLEITERBASIERTEN SUBSTRATEN

Title (fr)

REGULATION DE L'ANISOTROPIE DU CRISTAL DESTINEES AUX OXYDES DE PEROVSKITE SUR DES SUBSTRATS A BASE DE SEMI-CONDUCTEURS

Publication

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Application

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Abstract (en)

[origin: WO0006812A1] A crystalline structure (20, 60 or 220) and a device (120, 140, 180 or 270) which can be suited for use in any of a number of semiconductor or electro-optic applications, such as a phase modulator or a component of an interferometer, includes a substrate (22, 62, 142, 182, 222 or 272) of a semiconductor-based material and a thin film (24, 64, 144, 186 or 224) of a crystalline oxide material epitaxially arranged upon the surface of the substrate so that the thin film couples to the underlying substrate and so that the geometries of substantially all of the unit cells of the thin film are arranged in a predisposed orientation relative to the substrate surface. The predisposition of the geometries of the unit cells of the thin film is due to a stressed or strained condition of the lattice at the interface between the thin film material and the substrate surface and is responsible for a predisposed orientation of a directional-dependent quality, such as the dipole moment, of the unit cells. The predisposed orientation of the unit cell geometries enables a device within which the structure is embodied to take beneficial advantage of characteristics of the structure during operation.

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