

Analysis Of Strain Induced Pockels Effect In Silicon

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Analysis Of Strain Induced Pockels

Abstract We propose a theoretical model to describe the strain-induced linear electro-optic (Pockels) effect in centro-symmetric crystals. The general formulation is presented and the specific case of the strained silicon is investigated in detail because of its attractive properties for integrated optics.

OSA | Modeling of strain-induced Pockels effect in Silicon

The quadratic nonlinear susceptibility is responsible of the Pockels effect Our goals 1. $\chi(2)$ as a function of the strain gradient tensor 2. Theory and optimization of nonlinear effects in silicon waveguides

Analysis of strain-induced Pockels effect in Silicon

Manganelli CL, Pintus P, Bonati C. We propose a theoretical model to describe the strain-induced linear electro-optic (Pockels) effect in centro-symmetric crystals. The general formulation is presented and the specific case of the strained silicon is investigated in detail because of its attractive properties for integrated optics.

Modeling of strain-induced Pockels effect in Silicon.

The strain induced electro-optic effect of silicon has been measured by exploiting a fully integrated Mach Zehnder Interferometer in a push-pull configuration with a difference length. The strain is applied by covering the silicon waveguide with a straining silicon nitride (Si. 3. N. 4) cladding layer

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Modeling of strain-induced Pockels effect in Silicon | Bowers

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Modeling of strain-induced Pockels effect in silicon

Pockels effect has been experimentally measured in strained silicon, making it a promising candidate material for realizing optical modulators and switches. In this paper we will investigate the electro-optic effect induced by applied strain gradient in silicon optical waveguides. Use of COMSOL Multiphysics®:

Analysis of Stress-induced Pockels Effect in Silicon ...

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[1507.06589] Modeling of strain-induced Pockels effect in ...

A rich set of investigations have been performed on strained metal surfaces over the last 15 years, and the mechanistic reasons behind strain-induced reactivity are explained by an electronic...

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Strain induced Pockels effect in silicon for electro-optic ...

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Modeling of strain-induced Pockels effect in Silicon ...

The efficiency of a strain-induced Pockels effect in silicon was determined in a high-speed regime by taking the advantage of the traveling wave electrodes placed above the MZI in order to...

Fast linear electro-optic effect in a centrosymmetric ...

Abstract: We propose a theoretical model to describe the strain-induced linear electro-optic (Pockels) effect in centro-symmetric crystals. The gen-eral formulation is presented and the specific case of the strained silicon is investigated in detail because of its attractive properties for integrated optics.

effect in Silicon

When 001 plates of $KD < \text{SUB} > 2 < / \text{SUB} > PO < \text{SUB} > 4 < / \text{SUB} > (KD * P)$ are used in Pockels cells, strain induced refractive index variations result in beam depolarization and transmitted wavefront distortion. The depolarization is determined by the induced birefringence while the wavefront distortion is controlled by the average index shift.

Investigation of strain birefringence and wavefront ...

Relative to the wild-type (WT) strain, by Western analysis, strains with the GAL-POL1 or the GAL-POL3 fusions have 10% of the levels of alpha and delta DNA polymerases, when grown in low-galactose (0.005% galactose, 3% raffinose) medium, and a fivefold elevation of these polymerases when grown in high-galactose medium (10, 27).

Analysis of APOBEC-induced mutations in yeast strains with ...

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Modeling of strain-induced Pockels effect in Silicon - CORE

In this dissertation we investigate the strain induced Pockels effect in silicon waveguides. We introduce a Figure of Merit (FOM) that characterizes the Pockels effect in various silicon waveguides and show the proposed FOM has an excellent correlation with the experimentally obtained second order nonlinearity $\chi(2)$.

Modeling of Strain Induced Pockels Effect in Silicon ...

Mining induced strain is one of the most difficult parameters to predict, as it is affected by a number of mechanisms. Observed strain profiles can be very irregular, even though the observed subsidence, tilt and curvature profiles are reasonably regular.

Analysis of Mining Induced Strains

Analysis of APOBEC-induced mutations in yeast strains with low levels of replicative DNA polymerases Proc Natl Acad Sci U S A . 2020 Apr 28;117(17):9440-9450. doi: 10.1073/pnas.1922472117.