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Author

Skoromets, V (Skoromets, V.); Kadlec, F (Kadlec, F.); Kadlec, C (Kadlec, C.); Nemec, H (Nemec, H.); Rychetsky, I (Rychetsky, I.); Panaitov, G (Panaitov, G.); Muller, V (Mueller, V.); Fattakhova-Rohlfing, D (Fattakhova-Rohlfing, D.); Moch, P (Moch, P.); Kuzel, P (Kuzel, P.)

Title

Tuning of dielectric properties of SrTiO(3) in the terahertz range

Source

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Abstract

Tuning of the dielectric permittivity spectra of strontium titanate (SrTiO(3)) single crystals in an external electric field is investigated between 90 and 300 K by means of terahertz time-domain spectroscopy. Application of the electric bias leads to an appreciable tuning of the permittivity observed up to room temperature both in the parallel and perpendicular directions to the bias field. The observed behavior is interpreted in terms of soft-mode hardening due to the anharmonic character of its potential. No additional low-frequency relaxation mode was observed. A weak temperature dependence of the anharmonic coefficients was found in agreement with previously published low-temperature data.