



Ferroelectric AgNa(NO₂)₂ crystals as novel highly efficient nonlinear optical material: Phase matched second harmonic generation driven by a spontaneous and electric field induced polarizations

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Auteur	Sahraoui, Bouchta [1], Czaplicki, Robert [2], Klopperpieper, A. [3], Andrushchak, A.-S. [4], Kityk, A.-V. [5]
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Résumé en anglais	<p>Paper reports the second harmonic generation(SHG) in ferroelectric AgNa (NO 2) 2 crystals being driven by the spontaneous and electric field induced polarizations. Obtained results are interpreted within the phenomenological theory which considers the free energy describing the interaction between the spontaneous or electric field induced polarizations and spatially inhomogeneous electric polarizations resulted from propagating optical waves. Relatively high magnitudes of the effective second order nonlinear optical (NLO) susceptibilities in these crystals are combined with several phase matching geometries which allows to consider them as high-performance materials for potential NLO applications, such as parametric generation and amplification, frequency doubling, or other applications that require high-efficient frequency conversion. In addition, an anomalously large response of NLO susceptibilities with respect to an applied electric field has been found in the vicinity of the Curie point. This may also have a number of applications, especially in those devices where an efficient tunable control of SHG intensity is demanded.</p>
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Titre abrégé Ferroelectric AgNa(NO₂)₂ crystals as novel highly efficient nonlinear optical material

Liens

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