

POLARIZATION
DEPENDENCE OF TWO-WAVE
MIXING IN COUNTERPROPAGATING
GEOMETRY IN SILLENITE CRYSTALS

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S u m m a r y

An investigation of holographic recording in the counterpropagating geometry of two-wave mixing experiments for crystals of the sillenite-group is presented. Three identical samples of $\text{Bi}_{12}\text{SiO}_{20}$ (BSO), $\text{Bi}_{12}\text{TiO}_{20}$ (BTO), and $\text{Bi}_{12}\text{GeO}_{20}$ BGO crystals have been investigated. It was shown that a maximum grating amplitude and a maximum diffraction efficiency are observed for the recording by beams with different directions of linear polarization. The optimal angle between the polarizations of recording beams depends on the value of optical activity and the crystal length. Also, an analytical solution for the diffraction efficiency for different polarization states as well as numerical calculations based on the analytical solution and experimental data are shown.