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Title:Far-infrared dispersion of the complex dielectric constant in ferroelectric near-stoichiometric LiNbO₃:Ce

Authors:Wu, Liang (1); Ling, Furi (1); Zuo, Zhigao (1); Liu, Jinsong (1); Yao, Jianquan (1)

Author affiliation:(1) Wuhan National Laboratory for Optoelectronics, School of Optoelectronic Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, China; (2) College of Precision Instrument and Optoelectronics Engineering, Tianjin University, Tianjin 300072, China

Corresponding author:Wu, L.

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Abstract:The dielectric properties of near-stoichiometric LiNbO₃:Ce (near-SLN:Ce) single crystal have been investigated by using terahertz time domain spectroscopy (THz-TDS) in a frequency range of 0.7-1.6THz at room temperature. When coupled with an applied external optical field, a photorefractive effect was observed, resulting in the modulation of the complex dielectric constant for near-SLN:Ce. The variation of the refractive index $|\Delta n|$ has a linear relationship in scale with the applied light intensity accompanied with an abrupt decrease. These findings were attributed to the internal space charge field of photorefraction and the light-induced domain reversal in the crystal.

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