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

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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 0.7–1.6 THz 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.