

ELECTROOPTIC AND PHOTOREFRACTIVE  
PROPERTIES OF IRON-DOPED LITHIUM  
NIOBATE CRYSTALS WITH EXTERNALLY  
APPLIED EXTREMELY LARGE  
ELECTRIC FIELDS

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S u m m a r y

The influence of extremely large, externally applied electric fields onto the electrooptic and photorefractive properties of iron-doped lithium-niobate crystals is investigated using reflection holography. The impact of an active feedback method used for interference fringe stabilization during holographic recording is studied. We show that extremely large fields increase the photorefractive sensitivity  $S$  up to  $40 \text{ cmJ}^{-1}$  and saturation values of the refractive-index changes  $\Delta n_s$  to  $12 \times 10^{-4}$ . Furthermore, the feedback system introduces a frequency shift between the two recording beams and modifies the photorefractive response of the crystals.