

UTILIZING THE PYROELECTRIC EFFECT
FOR INFRARED HOLOGRAPHIC RECORDING

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S u m m a r y

Holographic gratings are stored in photorefractive lithium tantalate crystals with infrared laser pulses without previous sensitization. Through the absorption of infrared light, a thermal grating builds up, which yields a pyroelectric field. Subsequent homogeneous illumination with light of a shorter wavelength excites electrons that drift in the pyroelectric field. Thus, the holographic information of the infrared light pattern is stored as a volume phase hologram that can be read nondestructively. The refractive-index change depends mainly on the absorption coefficient at the wavelength of the recording light and therefore, by choice of suitable dopants, may be extended to telecommunication wavelengths.