

DOPED STOICHIOMETRIC LITHIUM NIOBATE CRYSTALS AND METHOD FOR HIGH-SPEED HOLOGRAPHIC DATA STORAGE

ABSTRACT

[0063] The present invention discloses a recording medium comprising an improved doped Stoichiometric Lithium Niobate (SLN) crystal for high-speed holographic data storage. The improved doped SLN has an extremely high optical damage resistance of more than 145 kW/cm^2 for power density of an incident laser beam along the c axis. The Recording time using the present improved doped SLN is advantageously very short and is about 1 second for a single hologram with a saturated diffraction efficiency of 28.7% at a recording laser beam density of 70 W/cm^2 . Reliable retrieval of a signal-image written at as low as 1 milliseconds has been performed in the Z-cut doped SLN. The present recording medium comprises an improved doped SLN of a Z-cut SLN crystal doped with Iron (Fe) and Terbium (Tb). The Terbium (Tb) content within the fluxed melts for growing the improved doped SLN ranges from 10 ppm to 140 ppm.

[0064] FIG.14 accompanies the abstract.