

Laser Conoscopy and Photoinduced Light Scattering in a Lithium Niobate Crystal Doped with Y(0.24 wt.%):Mg(0.63 wt.%)

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The effect of "non-photorefractive" dopants Y(0.24 wt.%) and Mg(0.63 wt.%) of a lithium niobate crystal on photorefractive light scattering was studied. The data obtained indicate that the crystal under study is characterized by a noticeable effect of photorefraction, however, with time, the scattering indicatrix is suppressed. Thus, the simultaneous introduction of Y³⁺ and Mg²⁺ cations at the indicated concentrations into the structure of congruent lithium niobate leads to a decrease in the photorefraction effect during irradiation, but does not completely exclude it.

The conoscopic patterns of LiNbO₃: Y(0.24 wt.%):Mg(0.63) crystal samples (P ~ 1 mW) correspond to the conoscopic patterns of uniaxial, optically homogeneous crystals. In the experiment, distortions of conoscopic patterns were recorded, which appear additionally with an increase in the laser radiation power from ~ 1 to ~ 90 mW.

