Diploma thesis abstract

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Detection of Laser Induced Micromodifications in Transparent Dielectrics by THG of Cr:Forsterite Laser Radiation

Diagnostic method of laser induced micromodifications of transparent dielectrics volume by third harmonic generation of tightly focused femtosecond Cr:Forsterite laser radiation was investigated. To produce laser-induced micromodifications of fused silica and $LiNbO_3$ crystal we used tightly-focused fundamental Cr:Forsterite laser radiation with intensity above 10^{13} W/cm^2 exceeding plasma formation threshold for a medium. Produced micromodification was detected by laser radiation with energy below plasma ignition threshold.

Third-order nonlinear susceptibility was estimated for LiF sample and structure of multilayered sample was observed by THG technique.

It was shown that THG process is an universal unperturbative diagnostic method of transparent and low-scattering solid-state media structure.