

Diploma thesis abstract

"Nonlinear optical properties of potassium dihydrogen phosphate crystals with incorporated titanium dioxide nanoparticles"

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The influence of anatase titanium dioxide nanoparticles incorporated in KDP matrix on nonlinear properties of crystal was investigated. The effects of second harmonic generation and supercontinuum generation in KDP and KDP:TiO₂ crystals under resonant excitation with picosecond and femtosecond laser pulses with wavelengths of 1075 - 1400 nm were studied.

Enhancement of second harmonic generation efficiency in crystals with nanoparticles excited by picosecond pulses with peak power up to 2 MW was observed. Increase of more than five times in nonlinear response of KDP:TiO₂ crystal compare to KDP when both excited by femtosecond pulses with peak power above 100 MW was shown.