

PHOTOINDUCED REFRACTIVE INDEX
VARIATION IN THE KDP SINGLE
CRYSTALS WITH INCORPORATED
TiO₂ NANOPARTICLES UNDER CW
LASER EXCITATION

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S u m m a r y

For the first time, the impact of TiO₂ (anatase modification) nanocrystals on the photoinduced optical absorption and refractive index variations in KDP single crystals with the self-action of CW laser radiation at 532 and 1064 nm is studied. It is shown that the incorporation of anatase nanoparticles changes the sign of the refractive nonlinear optical response relatively to that for the KDP crystal matrix at 532 nm due to the resonance overlapping of the energy states of intrinsic defects in the crystal matrix and the surface states of TiO₂ nanoparticles. The sign and the magnitude of the photoinduced variations depend on the concentration of incorporated nanoparticles, crystal growth sector, and irradiation wavelength.