

OPTICAL QUALITY CHARACTERIZATION
OF KDP CRYSTALS WITH INCORPORATED
TiO₂ NANOPARTICLES AND LASER
SCATTERING EXPERIMENT
SIMULATION

*V.Ya. Gayvoronsky¹, V.N. Starkov¹, M.A. Kopylovsky¹,
M.S. Brodyn¹, E.A. Vishnyakov¹, A.Yu. Boyarchuk¹,
I.M. Pritula²*

¹Institute of Physics, Nat. Acad. of Sci. of Ukraine
(46, Nauky Prosp., Kyiv 03680, Ukraine;
e-mail: vlad@iop.kiev.ua),

²STC “Institute for Single Crystals”,
Nat. Acad. of Sci. of Ukraine
(60, Lenin Ave., Kharkiv 61001, Ukraine)

S u m m a r y

We study the elastic scattering of light in pure KDP crystals and KDP crystals with incorporated titanium dioxide nanoparticles. It is shown that the optical quality of the crystals decreases insufficiently for the used concentrations of nanoparticles. A mathematical model of the experimental setup for light scattering measurements in low-dispersion media is developed and discussed. The propagation function of the experimental setup is given in analytical form. The relevance of the model is verified with the use of experimental scattering data.