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Piezoelectric resonance spectroscopy of crystals exhibiting ionic conducitvity

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High-power visible and ultraviolet radiation is widely used in modern laser industry. Laser radiation in these spectral regions is usually obtained using nonlinear-optical crystals for frequency conversion of infrared laser radiation. Efficiencies of the conversion processes are governed by temperature dependent phase matching conditions. It is well known that nonlinear-optical crystals possess ionic conductivity. Temperature gradients inside the crystal interacting with laser radiation affect the ionic conductivity, which, in turn, produces an adverse impact on the phase matching condition and conversion efficiency. Ionic conductivity strongly depends on temperature and can directly effect the material optical properties, e.g. optical absorption. We propose to use piezoelectric resonance spectroscopy for the investigation of ionic conductivity phenomenon in crystals interacting with laser radiation. Experimental and theoretical aspects of this approach are considered.

Biography

Aleksei Konyashkin completed his PhD from Kotelnikov Institute of Radio Engineering and Electronics of RAS. He is the Senior Scientist at the Kotelnikov Institute of Radio Engineering and Electronics of RAS. He has published more than 15 papers in reputed journals.

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