Diploma thesis abstract

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“ THz radiation generation in GaSe crystal on the second – order nonlinearity”

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The diploma thesis is devoted to investigation of linear and nonlinear optical properties of GaSe and possibility of its application as the converter of laser radiation into terahertz range. For this purpose, refraction and absorption properties of GaSe crystal and its modifications were studied. Phase matching conditions for various types of interactions were studied on the basis of these data. Features of optical rectification of femtosecond pulses of Ti:Sa laser in GaSe crystal at various types of interaction were experimentally studied , broadband and narrow-band generation of THz radiation was achieved, comparison of efficiency of such transformations was carried out. In the last case possibility of frequency tuning of THz of radiation was shown. The compact source of THz radiation on the basis of process of difference frequency generation in GaSe, pumped by the dual - frequency nanosecond Q-swithed Nd:YLF laser, is created. Theoretical estimates and experimental check are carried out, prospects of increasing of output power of THz radiation are considered.