The prospects of using TIPS-A for quantum and organic electronic devices are presented (thin film lasers and OLED).

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PASSAGE OF RADIATION NON-CHAIN HF (DF) LASER THROUGH CRYSTALS GE

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This report presents the results of research the transmission pulsed non-chain HF (DF) laser germanium samples of varying degrees of purity, thickness and conductivity. It was investigated the influence of the geometrical parameters of the beam and the intensity distribution of radiation on the spot depending on the density of the sample transmission of the incident laser power. Duration of the laser pulse was $t1/2 = 150$ ns. It has been found that even at low intensities ($I_{las} = 0.2$ MW/cm^2) laser irradiation HF observed essentially nonlinear radiation passing through Ge. This effect is due to the absorption of non-equilibrium carriers produced in the two-photon absorption of HF laser. It was developed a computer model to calculate the radiation of HF laser passing through Ge, which adequately describes the results of experiments. Computer simulation shows that the amount of energy transmitted through the crystal Ge, strongly depends on the pulse shape and distribution of HF laser on the spot. Therefore, it is necessary to consider the real pulse shape and energy distribution on the spot for determining the coefficient of two-photon absorption in Ge.

It was shown that the germanium plate can be an effective corrector power density distribution of HF laser radiation over the cross section of the laser beam. The data obtained can be used to create effective limiters laser power range of 2.5–3.2 microns.

Nonlinear transmission DF laser radiation (range 3.6–4.1) due to three-photon process, appears at much higher irradiance ($w_{las} > 1$ J/cm^2). This work was supported by Grant from RFBR No. 15-02-06005.

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EXCIPLEXES IN HIGHLY EXCITED TRIPLET STATES

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Highly excited triplet states of aromatic molecules are considered in this study. A mechanism of energy transfer from highly excited triplet aromatic molecules has been developed, which involves a stage of formation of an exciplex between a highly excited energy donor molecule and an unexcited energy acceptor molecule. Interpretation of the experimental data on the shape and the intensity of triplet–triplet absorption bands and the energy transfer probability is presented.

The results must be taken into account when considering laser media for organic compounds.

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