semiconductor structures with traps and heterogeneity. The amplitude characteristics of the semiconductors were measured on a special setup for the amplitude analysis, which allowed the collected charge to be estimated with high accuracy. After the electron hole pair generation, the sample featured the motion of nonequilibrium charge carriers.It is shown that during the drift of electrons through the crystal, the current slightly changing as a result of trapping of a part of the nonequilibrium carriers by traps. If the sample was subjected to the action of ultrasonic waves, dependence of the signal amplitude on the field strength was described complex form which the physical reasons of this behavior were considered in the present article. Besides for comparison it was study of the photoelectrical, reflection and spectral characteristics of nonepiezosemiconductor and piezosemiconductors.

Method of Producing p–i–n Structures by Compensation of Lithium Ions from both side of Silicon

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Semiconductor nuclear radiation detectors are needed to solve certain problems in nuclear spectroscopy. The development of efficiency detectors became possible with advances in growing high purify silicon single crystals with the required properties, satisfying the requirements for obtaining detectors based on them. One important requirement for obtaining detectors with sensitive area is that its resistance must be high. This is achieved by using the lithium ion drift process in the volume of the semiconductor detector. Thus it has been developed and created silicon semiconductor nuclear radiation detectors with vide range of diameter of sensitive area up to 100 mm and thickness (from 1mm to 10mm). At present work a new method for producing p–i–n structures was developed to decrease substantially the time required for compensation of silicon by lithium ions and to eliminate at the same time the negative consequences of holding the crystal at a high temperature and under a high voltage. Drift of lithium ions from two ends of prepared samples is conducted to a depth sufficient for the required compensation of the initial acceptor impurity in silicon. The method described above was used to fabricate a batch of Si(Li) detectors with a 1–10 mm thick and 10–110 mm in diameter sensitive region. The thickness of the sensitive region was determined by performing standard measurements and chemical pigmentation. Advantages of detectors are they have improved properties and less time for compensation of lithium ions.

Multiply Charged Ions of the Oxygen – Produced at Interaction of Laser Radiation with Two-Element Solids

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The interest to study of the oxygen multiply charged ions spectra produced at interaction laser radiation with one and two-element solids, is associate with possibility of creating laser and inertial thermonuclear syntheses, effective sources of multiply charged ions

and nuclei atoms elements, plasma lasers, lasers on multiply charged transition, design of radiation-resistant materials and others. The present time many works is devoted to multiply charged ions, obtained from one element targets. Experimental results of study charge and energy spectra multiply charged ions of the oxygen, formed at interaction laser radiation with one and two-element solids are given in this work. Our experiments, we used installation, which is described in [1]. Neodymium laser had following parameters: wavelength = 1.06 μm; intensity q = (0.1 ч 1000) GW/cm2; angle of incidence = 180. Were study one element Al, and two-element Al2O3, Y2O3 targets by a diameter of 10 mm and thickness of 3 mm.

Analysis obtained charge and energy spectra of multiply charged ions one (Al) and two-element (Al2O3, Y2O3) targets depending on intensity of laser radiation and targets components reveal the following:

- maximal charge number one element target (Al) at q = 500 GW/cm2 is equal Zmax = 6 and all peaks corresponding to charge numbers Z = 1 - 6 well resolved, but two-element targets (Al2O3) Zmax ions Al decrease before 3. Also it is necessary to note that, Zmax ions of the oxygen depend on target components. In case Al2O3 and Y2O3 maximal charge number of oxygen ions are equal Zmax = 6 and 3, accordingly;

- obtained charge and energy spectra of oxygen ions being included in two-element targets, are indicative of that, general regularities of the change Zmax, Emax and structures charge and energy spectra depending on q laser are saved. However they hang by target components;

- common features and some differences of energy spectra multiply charged oxygen ions of two-element targets is concluded in that, is saved character of the spectra, i.e. has a wide energy spectra with one maximum, with increase charge number of ions its maximums move aside greater energy, width of the spectrum increases with increase q laser.

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Morphology of Destruction and Multiply Ionization of the Tungsten Atoms under Influence Two Beam Laser Radiation

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Results of mass spectrometry and microscopic investigations to morphology of destruction and multiply ionization of tungsten atoms under influence one and two beam laser radiation are given in this work. Experimental installation and investigation methods are in detail described in [1, 2]. The comparison of obtained mass-charge, and energy spectra multiply ionization atoms W, and morphology of destruction with using one and two beam laser radiation enabled to establish some peculiarity, both in morphologies of destruction, and in multiply ionization atoms W. These peculiarity reveal itself in character of destruction to W surface, in volume of the intensive multiply charged ions comparatively one charge, in energy of ions, in character of energy spectra, and in their change to dependencies from angle of incidence of the second beam, amount of beam and power density of laser radiation. It should be noted that, when using two beam of laser local destruction of target surface is accompanied forming interference pictures, as well as significant increase to intensive multiply ionization atoms and charge number this, which conditioned additional ionizing atoms (ions) are imitating by first laser beam.

Forming the local destruction (~35 мм) and interference pictures on the metal surface are considered simultaneously with forming intensive multiply charged ions flow under one-