

# Investigation of the interaction of ion beams and X-ray quanta with deuterated crystal structures at the HELIS facility.

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The results of studies of the interaction of ion beams and X-ray quanta with deuterated crystal structures at the HELIS facility (LPI) are presented. Results on research of DD-reactions in deuterated crystal structures at deuteron energies 10-25 keV are shown significant enhancement effect. It is shown that the effect of the beams of ions Ne<sup>+</sup> and H<sup>+</sup> at energies in the range of 10 - 25 keV and a beam of X-radiation of 20-30 keV for deuterated target leads to stimulation of DD-reaction. For the target of CVD-diamond showed that the orientation of the sample with respect to the deuteron beam affects the neutron yield. Targets (deuterated CVD diamond, palladium, zirconium and titanium) were irradiated with both ion beams and X-ray quanta using an X-ray tube with an energy of up to 30 keV. Analysis of X-ray fluorescence spectra from deuterated targets of CVD diamond and palladium revealed "additional" peaks that are not identified by any of the characteristic radiation lines. Their appearance can not be connected with any known element, as well as with diffraction processes.

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