PULSED ION BEAM INDUCED CHANGES IN A TOPOGRAPHY OF THE SURFACE LAYERS OF VT1-0 AND VT6 TITANIUM ALLOY

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Samples were subjected to PIB impact on the TEMP. Irradiation was carried out by beam pulses containing 70 % of carbon ions and 30 % of hydrogen ions. The beam energy was 250 keV, the pulse duration was ~ 100 ns, and the current density in a pulse was 150–200 A/cm^2. The energy density on the sample surface under the impact of a single pulse varied from 0.5 to 3.0 J/cm^2.

The surface topography was checked by a Quanta 200 3D scanning electron microscope with thermal emission and a Quanta 600 FEG with field emission.

Traces of the ion beam impact in the form of a topographical feature, mainly concentric, were observed. Recesses of a crater form with more or less clear circular structure appear on the surface with the increase in the energy density to 1 and 3 J/cm^2.

The average size of craters at the energy density of 1 and 3 J/cm^2 is ~20 ± 2 and 25 ± 2 μm, the density of craters (on irradiated surface) has made the order of 5 · 104 sm^{-2}. Features of generated which structure (a drop phase, formation of crosspieces) are formed testify to course of processes of melting and fast crystallization. At an irradiation of VT6 by 1 pulse of beam (density of energy 1 J/cm^2) on a surface of the sample forms microcraters with the average diameter about 2–3 μm and depth 2–3 μm too.

Keywords: *ion beam, surface topography, titanium alloy.*