

INVESTIGATION OF PHASE TRANSITIONS IN SINTERED W-6wt.%B₄C - 2wt.%TiC -1wt.%C ALLOY IRRADIATED BY He IONS

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To achieve homogeneous sintering, the samples are subjected to a temperature gradient for 2 hours to 2550 °C, at a temperature step of 5 °C per minute. The weight ratio of the aforementioned materials determines also the ratio of the possible outcome, i.e. W2B, WB, W2B5, WB4 and WC phases. There is also a possibility for existence on non-stoichiometric W_xC compounds.

The Rietveld refinement analysis was carried out alongside the X-ray diffraction analysis. A comparison was made with neutron diffraction analysis. A basic W2B phase and a minimal amount of WB (~0.7%) phase were found on the surface. The following structural phases are observed inside: W, α-WB, β-WB, WB2. The W2B phase in the initial material inside is minimally available. After irradiation on the surface we see an increase in the WB phase by about 1%, at the expense of the W2B phase. Irradiation caused the disappearance of the W2B structural phase from the interior.

EP, AAD and LS acknowledge the support by the Grant of Plenipotentiary Representative of Republic of Bulgaria at JINR.