

In the bachelor thesis, mechanical properties and microstructure of Ti-15Mo alloy prepared by equal channel angular pressing were studied along with their dependence on the number of passes. Microhardness was studied by Vickers method, microstructure was studied by scanning electron microscopy and by electron back-scattered diffraction (EBSD). Finally, the elasticity modulus was measured by resonant ultra-sound spectroscopy. Microhardness significantly increased after the first ECAP pass. After the second and the third pass it was almost constant and it again distinctly rose after the fourth pass. Grains with the size of hundreds of micrometres were observed in all samples. The volume fraction of twinned material increased with the number of passes. Deformation bands were also observed, namely in samples after two and three passes. Elastic modulus significantly increased with increasing deformation by ECAP and the evolution of elastic modulus is qualitatively similar to the evolution of microhardness. Considering that the material was processed by ECAP at 250°C, the omega phase may have formed during the processing. The increase of microhardness and elastic modulus can be explained by the increasing volume fraction of the omega phase.