

Radiogenic ^3He and high –pressure hydrogen (80 MPa) impact on mechanical properties and structure of CrNi40MoCuTiAl alloy

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The paper presents results of research in hydrogen, radiogenic ^3He and their joint effects on mechanical properties and structure of CrNi40MoCuTiAl alloy in the range between room temperature and 873 K. Samples with various concentration of ^3He were made for the research, and radiogenic helium was built-up by “tritium trick” technique. Mechanical properties were determined by the results of tensile tests of samples in inert and hydrogen atmosphere at 80 MPa pressure. Cylindrical samples with the test portion diameter of 3 mm and 15 mm rated length were utilized in the research. Structure of alloy with various concentration of ^3He was analyzed by transmission electron microscopy.