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Effect of ternary alloying element addition on γ -U phase stability of U-14at.%Mo alloy at elevated temperature

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ABSTRACT

The phase stability of binary U-14at.%Mo, ternary U-10at.%Mo-4at.%X (X: V, Cr, Mn, Fe, Ni, Ru) and U-12at.%Mo-2at.%X (X: Ta, W) alloys at an elevated temperature has been characterized. The γ -U phase stability of the U-10at.%Mo-4at.%X (X: Ni, Fe) alloys of the ternary uranium alloys is similar to or better than that of the binary U-14at.%Mo alloy. The possible reasons for the good phase stability of the ternary U-10at.%Mo-4 at . % X (: Ni , Fe) alloys are related to the small atomic radii of Ni and Fe atoms, and the large alloying enthalpy.