

عنوان مقاله:

The Effect of δ -hydride Formation on the Mechanical Properties and Corrosion Behavior of the Zr-1% Nb Alloys

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نویسنده:

خلاصه مقاله:

In this study, the effect of hydride formation on the corrosion and mechanical behavior of Zr-1% Nb alloy in 0.5 M LiOH solution was investigated. Hydride phase was created by electrochemical method in 1 M H₂SO₄ solution at room temperature. In this method, the hydrogen atoms adsorb on the surface and then penetrated into the bulk, which causes formation of the hydride phase. The results of X-ray diffraction (XRD) and scanning electron microscopy (SEM) confirm the formation of the hydride phase in the sample. More hydride is formed in the sample with increasing current density, which led to the creation of more cracks. In addition, these cracks reducing the mechanical properties (about 12%) and significantly increased the corrosion rate of the sample due to the ionic and electronic changes in the (oxide layer (about 100 time.

کلمات کلیدی:

Corrosion, Electrochemical, Mechanical properties, Morphology, Hydride, Zirconium
الکتروشیمی، هیدرید، زیرکونیوم، خوردگی

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