Stability of zirconium passive films in nitric and sulphuric acid solutions

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Abstract

Anodix oxide films were formed galvanostatically on zirconium in nitric and sulphuric acid solutions. The stability of the formed oxide films were investigated. The effects of formation voltage, formation current and frequency on the dissolution behaviour of the formed oxide layers in both media were studied. Open-circuit potential and impedance measurements were used. The results reveal that the anodic oxide films formed in nitric acid solutions are more stable than those formed in sulphuric acid solutions under the same conditions. The stability of the anodic oxide films on zicornium was found to depend on the formation medium rather than the dissolving soltuion.

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