7th African Conference on Non Destructive Testing (ACNDT) & the 5th International Conference on NDT and Materials Industry and Alloys (IC-WNDT-MI)

2016

Effet de Silicium sur les propriétés de Ti déposé par évaporation thermique sous vide

D. Dergham, L. Chekour, N. MADAOUI, S. Hassani, M. Ouchabane, F. Lakoui

Abstract : In this work, structural, morphological, and mechanical properties of Ti-Si thin films grown by Vacuum Thermal Evaporation were investigated. A series of Ti-Sicoatings have been deposited by vacuum thermal evaporation technique, on Z200 steel and Si (100) substrates.180 mg of titanium powder and,4at.%, 7at.%, 11at.%, 17 at.%of Silicon grains were used as deposition source. X-ray diffraction, Scanning Electronic Microscopy were employed for structural and morphological study of the films, nano-indentation hardness testing test was used to evaluate the mechanical properties, the corrosion behaviors of the coatings were studied in aerated 3.5 wt. % NaCl aqueous solutions by interpretation of the electrochemical anodic polarization curves.The X-Ray Diffraction patterns reveal that all films are polycrystalline and matched those of -Ti , Ti5Si3, Ti-Si, and Ti4Si, the hardness and the Youngs Modulus increase firstly to achieve a maximum value 33 GPa, and 795 GPa then decrease smoothly with a further addition of Si to a weak value

Keywords : Ti-Si, Vacuum Thermal Evaporation