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## Abstract

In the present work, we investigate the soft regime behavior in plasma electrolytic oxidation on pure magnesium. The aim is to achieve thick, homogeneous and dense layers in order to improve the corrosion resistance of magnesium. The compositions, structure and morphologies of the oxide coatings formed using different working parameters were examined by energy dispersive spectroscopy, X-ray diffraction, and scanning electron microscopy. Corrosion resistance of the oxide coatings was evaluated in 3.5wt.% NaCl solution using potentiodynamic polarization tests. Zirconia-containing ceramic coatings were fabricated on pure magnesium by plasma electrolytic oxidation technique in two different anodic to cathodic charge quantity ratio (CR=1.2 & CR=0.85). It is shown that occurrence of

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