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Effect of Electrolyte Concentration on the Growth of Porous Anodic Aluminium Oxide (AAO) on Al-Mn Alloys

Abstract

In this study, the effect concentration of electrolyte on pore nucleation process during anodizing was investigated. It was found that the concentration of oxalic acid influenced the morphologies and regularities of porous AAO formed on aluminum-manganese substrate. When the concentration of oxalic acid is 0.1 M, the porous AAO exhibited a disordered pores arrangement and no long range order was observed. However, when the concentration was increased to 0.3 M and 0.5 M, hexagonal pores arrangement and long range order were obtained. Although the hexagonal pore arrangement was still retained, further increasing the concentration of oxalic acid to 0.7 M render the long range order disappeared. The rate of increase of oxide mass of porous AAO increased with the concentration of oxalic acid.

Keywords: Anodizing, Concentration, Manganese, Oxalic Acid, Porous Anodic Aluminium Oxide