

Effect of anodizing voltage on the morphology and growth kinetics of porous anodic alumina on Al-0.5 wt% Mn alloys

Abstract

In this study, the effect of anodizing voltage on the morphology of porous anodic alumina and growth kinetics of anodizing of aluminium manganese alloy was reported. It was found that the increasing anodizing voltage affect the morphology and dimensional parameters of porous AAO. Both pore diameter and interpore distance increased as a function of anodizing voltage. The regularity of porous AAO was affected by anodizing voltage. Dielectric breakdown occurred at anodizing voltage of 70 V and led to protrusions and cracks of the porous anodic alumina. Moderate anodizing voltage promoted the formation of well ordered pore arrangement while disordered pore arrangement was observed when the anodizing voltage was too low or too high. The thickness of porous AAO increased as the anodizing voltage increased.

Keywords; Anodizing, Manganese, Oxalic Acid, Porous Anodic Aluminium Oxide, Voltage