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A simple one-step anodising method for the synthesis of ordered porous anodic alumina

Abstract

Porous anodic alumina (PAA) has been produced on aluminium substrate by single-step anodising at 50 V in 0.3 M oxalic acid at 15°C for 60 min. The highly ordered pore and cell structure was achieved by subjecting the PAA to oxide dissolution treatment in a mixture of chromic and phosphoric acids. The nanostructure prior and post-oxide dissolution treatment was examined under scanning electron microscope. It was found that the oxide dissolution treatment improves the regularity of the cell and pore structure significantly. Uniform closely packed honeycomb structure of PAA is obtained. The uniformities of pore diameter and interpore distance are also enhanced. Compared to the PAA prior treatment, it was noticed that the pore diameter of the post-treatment PAA increases.

Keywords; Anodising, Porous anodic alumina, Nanoporous, Ordered, Oxalic acid