

Various Modification of Electrochemical Barrier Layer Thinning of Anodic Aluminum Oxide

Authors : W. J. Stępniewski, W. Florkiewicz, M. Norek, M. Michalska-Domańska, E. Kościuczyk, T. Czujko

Abstract : In this paper, two options of anodic alumina barrier layer thinning have been demonstrated. The approaches varied with the duration of the voltage step. It was found that too long step of the barrier layer thinning process leads to chemical etching of the nanopores on their top. At the bottoms pores are not fully opened what is disadvantageous for further applications in nanofabrication. On the other hand, while the duration of the voltage step is controlled by the current density (value of the current density cannot exceed 75% of the value recorded during previous voltage step) the pores are fully opened. However, pores at the bottom obtained with this procedure have smaller diameter, nevertheless this procedure provides electric contact between the bare aluminum (substrate) and electrolyte, what is suitable for template assisted electrodeposition, one of the most cost-efficient synthesis method in nanotechnology.

Keywords : anodic aluminum oxide, anodization, barrier layer thinning, nanopores

Conference Title : ICMSET 2014 : International Conference on Material Science and Engineering Technology

Conference Location : Paris, France

Conference Dates : December 30-31, 2014