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Self-induced current oscillations during anodization of Ti in LA containing DMSO electrolyte

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Abstract

During self-organized nanotubular oxide growth by electrochemical anodization of Ti in lactic acid (LA) containing dimethyl sulfoxide (DMSO) electrolytes, we observe the occurrence of regular current oscillations (COs). Key factors that influence COs are the LA concentration, the surface roughness and diffusion limitation. The oscillation characteristics (amplitude and period) depend on both LA concentration and applied voltage. Under optimized oscillation conditions a sequential growth/detachment of the TiO₂ layers is observed that leads to a selfstacking of TiO₂ nanostructured multilayers. (C) 2016 Elsevier B.V. All rights reserved.

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