عنوان مقاله:

A review of the growth of alumina nanotubes simulation and modeling in the aluminum anodizing process

محل انتشار:

کنفرانس ملی نانو ساختارها،علوم و مهندسی نانو (سال: 1395)

تعداد صفحات اصل مقاله: 15

نویسندگان:

Seyed Aref Memerifard - *Master student of Material science and engineering , Ceramic Department, Materials and Energy Research Center, Karaj, Iran*

Mohammadreza Rahimipour - *Department of Material science-Ceramic Engineering, Materials and Energy Research Center, Karaj, Iran*

Iman Mobashrpour - *Department of Material science-Ceramic Engineering, Materials and Energy Research Center, Karaj, Iran*

خلاصه مقاله:

In this study investigated a review of simulation models in anodizing process for Aluminum and its alloys. Cellular Automata (CA) model is one of the new model to simulation that for this simulation, the system consisting of corrosive electrolyte, porous anodic alumina film and alloy matrix is described as a 500×300 two-dimensional square lattice. Other model is using of CELL DESIGN and CAD software that this computer software aided design software was employed to simulate the current density distribution. For the range of process parameters studied, the electrochemical CAD software predicts accurately the measured thickness distribution along the anode. Another model is Laplace equation that we can derive the relationship between the electric field and current density along the electric field lines across the oxide barrier layer, which will be used later. Electric field lines are always perpendicular to equipotential contours within the oxide bulk. Poisson’s equation model also is one of the 1D and 2D simulation model that simulate the time evolution of pore formation to gain insight into the mechanisms responsible for pore ordering.

کلمات کلیدی:

Simulation models, Alumina nanotubes, Anodizing process, modeling