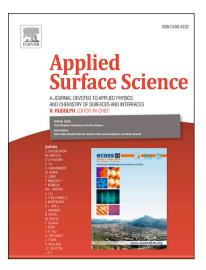
### Accepted Manuscript

#### Full Length Article

Influence of temperature and time on the fabrication of self-ordering porous alumina by anodizing in etidronic acid

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### ACCEPTED MANUSCRIPT

#### Influence of temperature and time on the fabrication of self-ordering porous alumina

by anodizing in etidronic acid.

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#### Abstract

The growth behavior of anodic porous alumina formed on aluminum by anodizing in etidronic acid was investigated. A high-purity aluminum foil was anodized in a 0.3 M etidronic acid solution at 25 °C and 40 °C and a constant anodizing voltage was 270 V. The estimated rate of oxide growth was approximately  $3.9 \ \mu m.h^{-1}$  at 25 °C and 20  $\ \mu m.h^{-1}$  at 40 °C and the anodizing process efficiency was about 80 % and 85 %, respectively. The influence of the electrolyte temperature and anodizing time on the self-ordering of nanopores alumina was studied with the averaged regularity ratio evaluated from Fast Fourier Transform intensity profile. The FFT and the regularity ratio showed that increasing the electrolyte temperature, the rate of self-ordering increases, greatly reducing the time required to obtain a highly ordered structure.

Keywords: Anodizing process, Porous anodic aluminum oxide, Etidronic Acid

#### 1. Introduction

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