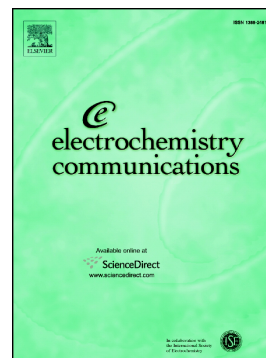


## Accepted Manuscript

Studies of oxide growth location on anodization of Al and Ti provide evidence against the field-assisted dissolution and field-assisted ejection theories

Mengshi Yu, Ying Chen, Chen Li, Shuo Yan, Huimin Cui, Xufei Zhu, Jianshou Kong



PII: S1388-2481(18)30003-1  
DOI: <https://doi.org/10.1016/j.elecom.2018.01.003>  
Reference: ELECOM 6128  
To appear in: *Electrochemistry Communications*  
Received date: 11 December 2017  
Revised date: 6 January 2018  
Accepted date: 6 January 2018

Please cite this article as: Mengshi Yu, Ying Chen, Chen Li, Shuo Yan, Huimin Cui, Xufei Zhu, Jianshou Kong, Studies of oxide growth location on anodization of Al and Ti provide evidence against the field-assisted dissolution and field-assisted ejection theories. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Elecom(2017), <https://doi.org/10.1016/j.elecom.2018.01.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Studies of oxide growth location on anodization of Al and Ti provide evidence against the field-assisted dissolution and field-assisted ejection theories

Mengshi Yu<sup>a</sup>, Ying Chen<sup>a</sup>, Chen Li<sup>a</sup>, Shuo Yan<sup>b</sup>, Huimin Cui<sup>a</sup>, Xufei Zhu<sup>a,\*</sup>, Jianshou Kong<sup>b,\*</sup>

<sup>a</sup>*Key Laboratory of Soft Chemistry and Functional Materials of Education Ministry, Nanjing University of Science and Technology, Nanjing 210094, China*

<sup>b</sup>*School of Automation, Nanjing University of Science and Technology, Nanjing 210094, China*

\*Corresponding author E-mail:

xfzhu@njjust.edu.cn (X.F. Zhu), kongjs77@njjust.edu.cn (J. Kong)

## Abstract

Electrochemical anodization, a method of obtaining highly-ordered porous oxides of various metal and alloys, has been studied for decades to elucidate the complicated formation mechanism. Both the widely supported field-assisted dissolution theory and the subsequently proposed field-assisted ejection theory suggest that porous oxide forms at the metal/oxide interface and is dissolved at the oxide/electrolyte interface. Here, in order to test this assertion, three-layered oxide films were fabricated on both Al and Ti foils. Both the inner and outer hemispherical bottoms vanish after the second anodization as they are covered by a new growth of oxide. The disappearance of both inner and outer hemispherical bottoms is evidence against the field-assisted dissolution and field-assisted ejection view that oxide grows only at the metal/oxide

Download English Version:

<https://daneshyari.com/en/article/6600970>

Download Persian Version:

<https://daneshyari.com/article/6600970>

[Daneshyari.com](https://daneshyari.com)