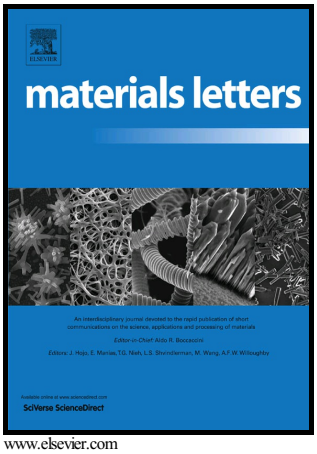

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PII: S0167-577X(16)31299-X
DOI: http://dx.doi.org/10.1016/j.matlet.2016.08.022
Reference: MLBLUE21306

To appear in: *Materials Letters*

Received date: 22 July 2016
Accepted date: 5 August 2016

Cite this article as: L. Ruiz de Lara, R. Jagdheesh and J.L. Ocaña, Corrosio Resistance of Laser Patterned Ultrahydrophobic Aluminium Surface, *Material Letters,* http://dx.doi.org/10.1016/j.matlet.2016.08.022

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Abstract

Ultrahydrophobic aluminium surface is fabricated by laser direct writing technique. Corrosion resistance was investigated using cyclic polarization curves and open circuit potential (OCP) measurements. The superhydrophobic surfaces exhibited improvement in corrosion rate and polarization resistance due to an oxide layer formed during the laser processing as well as by the small volume of air trapped in μ-cavities which resist the penetration of corrosive species and reduce the area of solid - liquid interface.

Keywords: Functional, Corrosion, Laser processing, Aluminium

1. Introduction

In recent years, the generation of functional surfaces emulating natural structures has gained considerable interest due to their potential industrial applications. Among the most sought functional properties, the high degree of water repellence (superhydrophobicity) characteristic of the lotus leaf has gained increasing interest for research due to its anti-corrosion and low hydrodynamic friction properties. Nanosecond (ns) laser sources can be used to create variety of micro/nano structures in open environment in a reliable way. Normally, the superhydrophobic property can be realized through a controlled ablation