

## Accepted Manuscript

Effect of nano-penning surface texturing on self-cleaning function

N. Coniglio, S. Mezghani, M. El Mansori, J. Cabrero



PII: S0257-8972(18)30873-9  
DOI: doi:[10.1016/j.surfcoat.2018.07.103](https://doi.org/10.1016/j.surfcoat.2018.07.103)  
Reference: SCT 23714  
To appear in: *Surface & Coatings Technology*  
Received date: 28 March 2018  
Revised date: 29 June 2018  
Accepted date: 11 July 2018

Please cite this article as: N. Coniglio, S. Mezghani, M. El Mansori, J. Cabrero , Effect of nano-penning surface texturing on self-cleaning function. *Sct* (2018), doi:[10.1016/j.surfcoat.2018.07.103](https://doi.org/10.1016/j.surfcoat.2018.07.103)

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.

# Effect of Nano-Peening Surface Texturing on Self-Cleaning Function

N. Coniglio<sup>1</sup>, S. Mezghani<sup>2</sup> M. El Mansori<sup>1</sup> and J. Cabrero<sup>3</sup>

<sup>1</sup>Arts et Métiers ParisTech d'Aix-en-Provence, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), 2 cours des Arts et Métiers, 13617 Aix-en-Provence – France

<sup>2</sup>Arts et Métiers ParisTech de Châlons-en-Champagne, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), Rue Saint Dominique - BP 508, 51006 Châlons-en-Champagne– France

<sup>3</sup> Saint Gobain, CREE, 550, Avenue Alfred Jauffret, BP 224, 84306 CAVAILLON Cedex, France

## ABSTRACT:

Surface texturation at micro- and meso-scales plays an important role in applications where cosmetic, aesthetic and self-cleaning functionalities are specified. This research paper deals with a multiscale surface, in which texturing and texture have a larger influence because they are scaled differently. The experimental approach highlights the important effect of texture and texturing on the anti-fingerprinting performance rated in term of surface wettability. We examine first, in detail, the wetting response of surfaces textured on aluminum alloy 6063 plates using nano-peening with various processing parameters. Roughness was measured by atomic force microscopy (AFM) and interferometry. Surface wettability was quantified using the sessile drop method. The calculation takes into account the wetting behavior of the textured surfaces at different scales. Correlations were made between the surface roughness and its functionality.

## 1. INTRODUCTION

Nano peening processes are applied to materials for manufacturing functional surfaces. The process consists in impacting the surface of a component by multiple high velocity shots that induce plastic deformation on the surface layer and subsequently affecting the surface properties such as its wettability [1]. The self-cleaning and Anti-Fingerprint (AF) functions are often demanded today for engineered surfaces. These surfaces are amphiphobic surfaces that possess

Download English Version:

<https://daneshyari.com/en/article/10142371>

Download Persian Version:

<https://daneshyari.com/article/10142371>

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