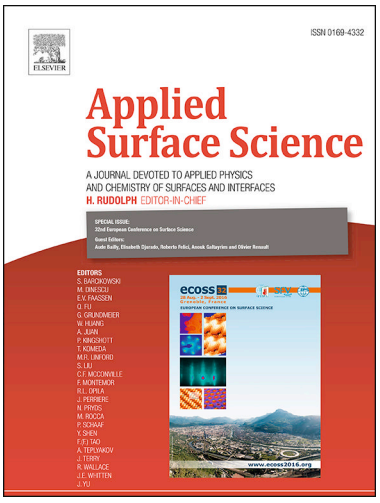

Full Length Article

The enhanced abrasion resistance of an anti-fingerprint coating on chrome-plated brass substrate by integrating sputtering and atmospheric pressure plasma jet technologies

Chi-Liang Ko, Yu-Lin Kuo, Wen-Jen Lee, Hsing-Ju Sheng, Jhao-Yu Guo

PII: S0169-4332(18)31028-6
DOI: https://doi.org/10.1016/j.apsusc.2018.04.075
Reference: APSUSC 39074

To appear in: *Applied Surface Science*

Received Date: 29 December 2017
Revised Date: 14 March 2018
Accepted Date: 8 April 2018

Please cite this article as: C-L. Ko, Y-L. Kuo, W-J. Lee, H-J. Sheng, J-Y. Guo, The enhanced abrasion resistance of an anti-fingerprint coating on chrome-plated brass substrate by integrating sputtering and atmospheric pressure plasma jet technologies, *Applied Surface Science* (2018), doi: https://doi.org/10.1016/j.apsusc.2018.04.075

The enhanced abrasion resistance of an anti-fingerprint coating on chrome-plated brass substrate by integrating sputtering and atmospheric pressure plasma jet technologies

Chi-Liang Ko[1], Yu-Lin Kuo*[1], Wen-Jen Lee [2], Hsing-Ju Sheng[1], Jhao-Yu Guo[1]

Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, 10607, Taiwan.

Department of Applied Physics, National Pingtung University, Pingtung 912, Taiwan.

Abstract

We demonstrate the procedure of fabricating an anti-fingerprint coating on plated-Cr/brass substrates by the combination of two processes: 1) Sputtering and 2) Atmospheric pressure plasma jet (APPJ). APPJ surface treatment on sputtered-SiO_x glue layer on plated-Cr/brass substrate is conducted to improve its surface property to be hydrophilic for chemical bonding with an anti-fingerprint agent (AF-C01). The results show that the surface energy of original substrate are evolving from 44.2 mN/m to 60.8 mN/m and 76.9 mN/m for the sputtered-SiO_x film and APPJ-treated SiO_x film, respectively. Subsequently, the spin-coating process using a commercialnt (AF-C01 agent for the prepared sample is implemented. The hydrophobicity of anti-fingerprint characteristics for all of the samples with a quite low surface energy around 10.5 mN/m are obtained. For practical evaluation of