

Scopus

## Document details

&lt; Back to results | 1 of 1

[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More...](#)
[Full Text](#)[View at Publisher](#)

IOP Conference Series: Materials Science and Engineering  
 Volume 204, Issue 1, 25 May 2017, Article number 012017  
 2017 5th International Conference on Nanomaterials and Materials Engineering, ICNME 2017; Bali; Indonesia; 1 April 2017 through 3 April 2017; Code 127992

## Modelling and Optimization of Copper Electroplating Adhesion Strength (Conference Paper)

Suryanto [✉](#), Haider, F.I. [✉](#), Ani, M.H. [✉](#), Mahmood, M.H. [✉](#)

Department of Manufacturing and Materials Engineering, International Islamic University Malaysia, PO Box 10, Kuala Lumpur, Malaysia

### Abstract

[View references \(9\)](#)

In this paper, Response surface methodology (RSM) was utilized to design the experiments at the settings of  $\text{CuSO}_4$  and  $\text{H}_2\text{SO}_4$  concentrations and current densities. It also used for modelling and optimize the parameters on the adhesion strength of austenitic stainless steel substrate. The adhesion strength was investigated by the Teer ST-30 tester, and the structure of the samples investigated by using scanning electron microscopy (SEM). The modelling approach adopted in the present investigation can be used to predict the adhesion strength of the copper coatings on stainless steel substrate of electroplating parameters in ranges of  $\text{CuSO}_4$  100 to 200 g / L,  $\text{H}_2\text{SO}_4$  100 to 200 g / L and current density 40 to 80 mA /  $\text{cm}^2$ . The results showed that, operating condition should be controlled at 200 g/L  $\text{CuSO}_4$ , 100 g/L  $\text{H}_2\text{SO}_4$  and 80 mA/ $\text{cm}^2$ , to obtain the maximum adhesion strength 10N. © Published under licence by IOP Publishing Ltd.

### Indexed keywords

Engineering controlled terms: Adhesion Austenitic stainless steel Bond strength (materials) Copper Electroplating Nanostructured materials Scanning electron microscopy

Austenitic stainless

Copper coatings

Copper electroplating

Operating condition

Response surface methodology

Stainless steel substrates

Engineering main heading: Stainless steel

ISSN: 17578981

Source Type: Conference Proceeding

Original language: English

DOI: 10.1088/1757-899X/204/1/012017

Document Type: Conference Paper

Sponsors:

Publisher: Institute of Physics Publishing

### Metrics

0 Citations in Scopus

0 Field-Weighted Citation Impact

PlumX Metrics 

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

### Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)[Set citation feed >](#)

### Related documents

Evolution of PVD Al oxide coatings in carburizing atmospheres at high temperature

Uribe, E. , Salas, O. , Melo-MÃximo, D.V. (2015) *Surface and Coatings Technology*

Pulse reverse electroplating for TSV filling in 3D integration

Hofmann, L. , Ecke, R. , Schulz, S.E. (2010) *Smart Systems Integration 2010 - 4th European Conference and Exhibition on Integration Issues of Miniaturized Systems - MEMS, MOEMS, ICs and Electronic Components*

High-strength nanocrystalline Ni-W alloys produced by electrodeposition and their embrittlement behaviors during grain growth

Yamasaki, T. (2001) *Scripta Materialia*