

---

# Electroless Deposition Principles, Activation, and Applications

---

## Editors:

### **S. Djokic**

Elchem Consulting Ltd.  
Edmonton, Alberta, Canada

### **J. L. Stickney**

The University of Georgia  
Athens, Georgia, USA

## Sponsoring Divisions:



**Electrodeposition**



**Energy Technology**



Published by

**The Electrochemical Society**

65 South Main Street, Building D  
Pennington, NJ 08534-2839, USA

tel 609 737 1902

fax 609 737 2743

[www.electrochem.org](http://www.electrochem.org)

**ecs**transactions™

**Vol. 33, No. 18**

---

Copyright 2011 by The Electrochemical Society.  
All rights reserved.

This book has been registered with Copyright Clearance Center.  
For further information, please contact the Copyright Clearance Center,  
Salem, Massachusetts.

Published by:

The Electrochemical Society  
65 South Main Street  
Pennington, New Jersey 08534-2839, USA

Telephone 609.737.1902  
Fax 609.737.2743  
e-mail: [ecs@electrochem.org](mailto:ecs@electrochem.org)  
Web: [www.electrochem.org](http://www.electrochem.org)

ISSN 1938-6737 (online)  
ISSN 1938-5862 (print)  
ISSN 2151-2051 (cd-rom)

ISBN 978-1-56677-874-9 (PDF)  
ISBN 978-1-60768-224-0 (Softcover)

Printed in the United States of America.

---

## Table of Contents

<i>Preface</i>	<i>iii</i>
Electrochemical Behavior of Nickel ACD-Electroless Deposition <i>L. Magagnin, P. Cojocar, and P. Cavallotti</i>	1
Electrodeposition and Electroless Deposition of Metallic Powders: A Comparison <i>S. Djokić, N. Nikolić, P. Živković, K. Popov, and N. Djokić</i>	7
New Surface-Activation-Process for Electroless Deposition of Adhesive Metal (Ni, Cu) Films on Si Substrates <i>S. Yae, K. Sakabe, N. Fukumuro, S. Sakamoto, and H. Matsuda</i>	33
Activation Free Electroless Ni for High Aspect Ratio Submicron Vias for Microchip Application <i>C. S. Tiwari</i>	39
Silver-Assisted Etching of Silicon Nanowires <i>S. Gielis, M. van der Veen, S. De Gendt, and P. M. Vereecken</i>	49
Galvanic Displacement of Nanostructured Gold for Flavoenzyme Adsorption in Biotechnology <i>L. Magagnin, P. Cojocar, A. Raygani, D. Brivio, F. Secundo, A. Turolla, and G. Ottolina</i>	59
Well Ordered Hollow Urchin-Like ZnO by Electrodeposition <i>J. Elias, C. Lévy-Clément, M. Bechelany, J. Michler, and L. Philippe</i>	67
Investigation of Dimethyl Sulfoxide Electrolytes for Electrodepositing Thermoelectric Bismuth Telluride Films <i>H. P. Nguyen, J. Su, Z. Wang, R. Vullers, P. M. Vereecken, and J. Fransaer</i>	75
Electrodeposition of Semiconductor n-CdTe and p-CdTe in Aqueous Medium and Aluminum Metal in a Nonaqueous Medium <i>B. Ashead and S. U. Khan</i>	81
Author Index	91