

TABLE OF CONTENTS

PART I: SUBMITTED PAPERS IN MORPHOLOGICAL EVOLUTION OF ELECTRODEPOSITS

CHAPTER 1: Keynote Lectures

The Effect of Additives on Morphology Evolution During Copper Electrodeposition	1
<i>R. C. Alkire</i>	

Proposal for a New Theory of Structural Control of Electrodeposited Films—Part of Surface Morphology Control Theory	17
<i>T. Watanabe</i>	

CHAPTER 2: Morphological Evolution of Electrodeposition

2.1. Fundamentals

The Role of Viscosity on Ion Transport in Thin-layer Electrodeposition	43
<i>G. Gonzalez, G. Marshall, F. Molina, S. Dengra, and H. Sanchez</i>	

Dynamical Analysis of Dense Morphologies in Thin Cell Electrodeposition	54
<i>F. Argoul, C. Leger, and J. Elezgaray</i>	

Morphology Control in the Formation of Compound Semiconductors Using Electrochemical Atomic Layer Epitaxy (EC-ALE)	76
<i>T. Wade, B. Flowers, K. Varazo, M. Lay, t. Sorenson, U. Happek, and J. Stickney</i>	

Feedback Control of Morphology Evolution in Metal Electrodeposition by Optical Means	85
<i>B. Bozzini, L. Corradini, C. Lenardi, C. Mele and M. Serra</i>	

2.2. Shape Evolution

Morphology Evolution in Bumping	97
<i>K. Kondo, M. Eguchi and t. Matsumoto</i>	

Localized Electrochemical Deposition of Copper Microstructures (I)-Modeling of Structure Formation	103
<i>R. Said and M. Hussein</i>	

Localized Electrochemical Deposition of Copper Microstructures (II): Artifacts of Electrode-Tip Geometry	112
<i>R. Said</i>	

Localized Electrochemical Deposition of Copper Micro-Structures (III): Controlling Shape Formation	120
<i>R. Said</i>	

The Effect of Current Waveform and Bath Temperature on the Surface Morphology and Texture of Copper Electrodeposits for ULSI.....	128
<i>H.-J. Lee, D. N. Lee and Y. J. Jeon</i>	
2.3. Crystal habits and Dendrites	
Dendritic Growth of Electrodeposited Copper in Well Supported Solution	134
<i>D. P. Barkey</i>	
Epitaxial Growth to Thin Films Formation	
of Cu₂O by Electrodeposition	140
<i>J. Lee, T.-G. Noh, U. Janakiraman, T.-G. Noh, and Y. Tak</i>	
Fabrication of Uniform Magnetic Nanoparticles in Ordered Aluminum Oxide Templates.....	
148	
<i>M. Sun, G. Zangari, and R. Metzger</i>	
In Situ Simultaneous Electrochemical and Optical Measurements for Characterization of CaCO₃ Electrodeposit.....	
160	
<i>H. Cachet, O. Devos, G. Folcher, C. Gabrielli, H. Perrot, and B. Tribollet</i>	
Effects of Organic Additives on Morphological Evolution of Electrodeposited Au and Au Alloys	
170	
<i>B. Bozzini, G. Giovannelli, C. Lenrridi, M. Serra and M. Placidi</i>	
Electroless Formation of Ramified Gold Deposits Under Organized Monolayers	
183	
<i>R. Saliba, C. Mingotaud, F. Argoul and S. Ravaine</i>	
Spatially Coupled Bipolar Electrodeposition in Thin-Layer Cells under periodic Voltage Control	
190	
<i>V. D'Angelo, G. marshall, J.-C. Bradley, G. Gonzalez, S. Babu, F. V. Molina and C. Iemmi</i>	
Pulsed Bipolar Electrodeposition of Palladium Onto Graphite Powder	
199	
<i>J.-C. Bradley, S. Babu, A. Mittal, P. Ndungu, B. Carroll, and B. Samuel</i>	
2.4. Morphology	
Microstructural Study of Gradient Copper-Alumina Films Electrocodeposited Using a Rotation Cylinder Electrode	216
<i>D. Wang and J. Talbot</i>	
Morphology of CdTeElectrodeposited From Ammoniacal Basic Aqueous Solutions	
229	
<i>K. Murase, T. Hirato, and Y. Awakura</i>	

Effects of Process Conditions on Film Properties of Electrochemically Deposited Sn-Ag-Cu Solder Alloys.....	239
<i>B. Kim, M. Funk, and T. Ritzdorf</i>	

Soft, High Moment Fe-Co-Ni Alloys Electroplated by Plated-Current Method	249
<i>X. Liu and G. Zangari</i>	

**PART II: PAPERS IN ELECTROCHEMICAL PROCESSING IN ULSI
FABRICATION AND ELECTRODEPOSITION OF AND ON
SEMICONDUCTORS IV**

*Electrodeposition Division/Dielectric Science and Technology Division/Electronics
Division*

Integrated Multiscale Simulation of Copper Electrochemical Deposition	259
<i>M. O. Bloomfield, K. E. Jansen, and T. S. Cale</i>	

Direct Electrochemical Deposition of Copper on PVD-W2N Liner Materials for ULSI Devices.....	267
<i>Michael J. Shaw and David J. Duquette</i>	

Galvanostatic Method for Quantification of Organic Suppressor and Accelerator Additives in Acid Copper Plating Baths	277
<i>Peter M. Robertson, Yuriy V. Tolmachev, and Dakin Fulton</i>	

Copper Interconnection via Displacement Deposition Atop Nitride Barrier Layer and Underneath Silicon Substrate.....	286
<i>Y. Wu, Y. Y. Wang, and C. C. Wan</i>	

The Effects of Cleaning and Pre-treatment on the Electroless Copper Deposition	298
<i>Youn-Jin Oh, Sung Min Cho, and Chan-Hwa Chung</i>	

An Acid-Based Electroless Cu Deposition Process: Chemical Formulation, Film Characteristics and CMP Performance	304
<i>Wei-Tsu Tseng, Chia-Hsien Lo, and Shih-Chin Lee</i>	

Electrodeposition and Characterization of CDTE/PBTE Composites: A preliminary investigation	319
<i>Igor Nicic, Curtis Shannon, Michael J. Bozack, Marcus Braun, Stephan Link, and Mostafa El-Sayed</i>	

Sub-Micron Platinum Electrodes by Through-Mask Plating	326
<i>K. L. Saenger, G. Costrini, D. E. Kotecki, K. T. Kwietniak, and P. C. Andricacos</i>	

Tuning the Properties of Zinc Oxide Thin Films Electrodeposited From Hydrogen Peroxide Oxygen Precursor	333
<i>T. Pauporte and D. Lincot</i>	
Experimental Studies on Electrodeposition of CoFe Alloys	346
<i>Hong Xu, Thomas E. Dinan, Emanuel I. Cooper, Lubomyr T. Romankiw, Christian Bonhote, and Delores Miller</i>	
Electrodeposition of Ferromagnetic Thin Films on Semiconductor Substrates.....	357
<i>P. Evans, C. Scheck, R. Schad, and G. Zangari</i>	
Electrochemical and Morphological Characterization of Cd_xZn_{1-x}S Electrodeposited on Ag(111) by ECALÉ	365
<i>F. Loglio, M. Innocenti, G. Pezzatini and M. L. Foresti</i>	
EC-ALE Deposition of CdSe Using an Automated Flow Deposition System	381
<i>Billy H. Flowers, Jr., Mkhulu K. Mathe, Raman Vaidyanathan, Nattapong Srisook, Uwe Happek, and John L. Stickney</i>	
Ion Transport Modeling in Realistic Thin-Layer Cell Configurations.....	388
<i>G. Marshall, S. Dengra, E. Arias, F. V. Molina, G. Gonzalez, and M. Vallieres</i>	
Author Index	400
Subject Index.....	403