Chemical Mechanical Polishing 10

Editors:

G. Banerjee
Air Products and Chemicals, Inc.
Gilbert, Arizona, USA

Y. Obeng
National Institute of Standards and Technology
Gaithersburg, Maryland, USA

V. Desai
New Mexico State University
Las Cruces, New Mexico, USA

K. Sundaram
University of Central Florida
Orlando, Florida, USA

Sponsoring Division:

Dielectric Science & Technology
# Table of Contents

**Preface**

**Chapter 1**

### Opening and Plenary Session

- Milestones in a Quarter Century of CMP - Plenary
  - M. A. Fury  
  
**Chapter 2**

### Process Development

- Potential-pH Diagrams of Copper for the Planarization Slurries with Different Complexing Agents
  - S. Aksu  
  
- Effect of Copper CMP Slurry Chemistry on the Rate of Agglomeration of Alumina Particles
  - N. Brahma, M. Chan and J. Talbot  
  
- Effect of KIO3 on Electrochemical Mechanical Removal of Ta/TaN Films
  - R. Govindarajan, N. Venkataraman and S. Raghavan  
  
**Chapter 3**

### Process Optimization

- CMP For Direct Wafer Bonding of Hermetically Sealed Cavity Structures
  - R. L. Rhoades and R. Danzl  
  
- Effect of Ceria Abrasives on Planarization Efficiency in STI CMP Process
  - B. Park, Y. Kim, H. Kim, H. Jeong and D. Dornfeld  
  
- Characterization of Dressing Behaviors and Optimization Technique in Chemical Mechanical Polishing
  - K. Chen and H. Young
Chapter 4
Post CMP Cleaning

Post-CMP Cleaning of Copper/Hydrophobic Low-k Dielectric Films
Y. Chen, S. Ko, K. Xu, Y. Wang, W. Tu and L. Karuppiah 83

NIR Monitoring of CMP slurries and Post-CMP Cleaning Solutions
E. Shalyt, G. Liang, G. Lu and P. Bratin 91

Reduction of Scratch on Brush Scrubbing in Post CMP Cleaning by Analyzing Contact Kinetics on Ultra Low-k Dielectric
X. Gu, T. Nemoto, A. Teramoto, T. Ito, S. Sugawa and T. Ohmi 103

Optimization of Post-CMP Ultrasonic Cleaning Parameters by Taguchi DOE
R. Nagarajan and V. Rahul 111

Challenges in Post CMP Cleaning for Advanced Technology Nodes
D. Tamboli, M. Rao and G. Banerjee 127

Author Index 135