
Chemical Mechanical Polishing 14

Editors:

R. Rhoades

G. Banerjee

B. Basim

L. Economikos

D. Huang

Y. Obeng

Sponsoring Division:



Dielectric Science & 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

ecstransactions™

Vol. 72, No. 18

Copyright 2016 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
Web: www.electrochem.org

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

ISBN 978-1-62332-387-5 (Soft Cover)
ISBN 978-1-60768-745-0 (PDF)

Printed in the United States of America.

Table of Contents

<i>Preface</i>	<i>iii</i>
----------------	------------

Chapter 1 CMP Applications and Integration

Impact of Business Trends on Advanced CMP Process Technology Development <i>R. Rhoades</i>	3
---	---

Chapter 2 CMP Control Systems

Advanced Process Control for Variability Control in Chemical Mechanical Polishing Process <i>D. R. Koli, R. Wan Hsiang Liang, H. J. Kim, R. Solan</i>	11
Advanced Carriers on Legacy CMP Tools - an Intelligent Solution for Flexible Production Environments and R&D Labs <i>M. Franz, I. Schubert, R. Junghans, R. Martinka, C. Rudolph, H. Wachsmuth, D. Trojan, B. VanDevender, P. Wrschka, K. C. Gottfried</i>	17

Chapter 3 CMP Fundamentals

Material Removal Behavior of Nano-Sized Cerium Hydroxide Abrasive Slurry for Chemical Mechanical Polishing <i>H. J. Kim, T. H. Lee, A. Ryan</i>	27
Mechanisms and Development of Ceria-Based, Fast Oxide Slurries <i>N. D. Urban, D. Dickmann, B. Her, B. Santora</i>	37

Fluorescence Correlation Spectroscopic Studies of Particle Properties for Colloidal Ceria Abrasives Used in Chemical-Mechanical Planarization	43
<i>D. K. Schorr, M. A. Smith, A. K. Rawat, C. T. Carver, M. Mansour, E. E. Remsen</i>	

Chapter 4 Emerging CMP Technologies

Surface Characterization Driven CMP Optimization for Gallium Nitride	55
<i>A. Karagoz, M. Siebert, P. Leunissen, G. B. Basim</i>	
Nano-Sized Chemical Release Capsules Enable High Planarization Efficiency CMP Processes	61
<i>R. Ihnfeldt, K. Javery, K. Nguyen, M. Nguyen</i>	
Study on the Polishing Performance of Silicon Carbonitride (SiCN)	73
<i>L. Qin, S. Gu, H. J. Kim, J. H. Han, D. R. Koli</i>	
3-D Extension of Chemical Mechanical Polishing for Nano-Structuring Applications on Alternative Technologies	81
<i>Z. Ozdemir, G. B. Basim</i>	
Author Index	85