

Current and Future Defectivity Issues from Components in the Semiconductor Industry 2012

**Albany, New York, USA
12 November 2012**

ISBN: 978-1-62748-419-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by SEMATECH
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact SEMATECH
at the address below.

SEMATECH
2706 Montopolis Drive
Austin, Texas 78741

Phone: (512) 356-3500
Fax: (512) 356-7848

www.sematech.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Current and Future Defectivity Issues from Components in the Semiconductor Industry	1
<i>V. Jindal</i>	
ISMI – Semiconductor Manufacturing: “Particle Issues Dominate Equipment Availability”	5
<i>J. Richards</i>	
Roadmap in Mask Fab for Particles/Component Performance	12
<i>F. Goodwin, V. Jindal, P. Kearney, R. Teki, J. Harris-Jones, A. Ma, A. Kadaksham, S. Wurm</i>	
Defectivity Issues	22
<i>S. Suh</i>	
Nano Defect Detection	30
<i>S. Yoo</i>	
Solving the Nanodeficiency Problem	40
<i>M. Lercel</i>	
Advanced Metrology Infrastructure And Inspection Capability To Analyze Sub 20nm Defects In MTC	54
<i>K. Dotan</i>	
Progress and Challenges in Sub 20 nm Particle Detection from Vacuum Components	68
<i>G. Denbeaux, Y. Khopkar</i>	
Striving Towards Zero Particle Vacuum Valves	81
<i>M. Zickar</i>	
Low Defectivity: Challenges and Issues for High Performance Elastomer Seals	88
<i>S. Wang, J. Legare, D. Lipnicke</i>	
Roadmap for Defect Reduction from Elastomers in the Semiconductor Industry	96
<i>N/A</i>	
The Valqua Way	100
<i>N/A</i>	
Elastomer Technology for Semiconductor Applications	105
<i>S. Jagels</i>	
22 nm & Beyond Challenges, Solutions and Improvements	115
<i>D. Vernikovskiy, D. Rafferty</i>	
Cleaning Requirements in the Sub 28 Nanometer World "Things that Didn't Matter Now Do"	122
<i>N/A</i>	
Dusty Plasma Physics: Implications on Particle Transport and Defect Mitigation for Semiconductor Processing	129
<i>A. Venkatraman</i>	
Understanding Particulate Motion in One Ultraclean Coater: EUVL Mask Blanks	139
<i>C. Walton, V. Jindal, P. Kearney, J. Folta, D. Sweeney</i>	
Modeling and Simulation for the NanoDefect Community	147
<i>P. Stoltz, A. Likhanskii, C. Zhou, V. Jindal, P. Kearney</i>	
Electrostatic Effects on Particle Mobility	155
<i>M. Hogsett</i>	
Advancements in Plasma Cleaning Method	167
<i>C. Moore</i>	
Overview and Discussion of Real Time In-Situ Vacuum Monitoring – Technical Challenges and Commercial Issues	175
<i>J. Mitchell</i>	
Mobility-Based Particle Size Classification and Detection Down to 2nm –Theory to Practice	183
<i>R. Anderson</i>	
Current and Future Defectivity Issues from Components in the Semiconductor Industry	205
<i>V. Jindal</i>	
Author Index	