

TABLE OF CONTENTS

Part I: Patterning of Low- and High- k Films and Damage Control in ULSI Device Fabrication

Plasma Damage

Effects of Arsenic Concentration Profile on Electric Properties of Gate Oxide in MOS Devices	1
<i>K.-S. Chang-Liao and C.-S. Chuang</i>	
Suppression of Plasma Charging Damage in Sub Micron Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETS) with Gate Oxynitride by Two-Step Nitridation	8
<i>P.-J. Tzeng, B.-F. Wu, and K.-S. Chang-Liao</i>	

Plasma Charging Damage Performance Assessment with Scaled-up Process from 200 mm to 300 mm Dielectric Etch Chambers	14
<i>S. Ma, C. Bjorkman, B. Mays, T. Kropwenicki, T. Feng, Q. Li, U. Dadu, M. Chang, and H. Shan</i>	

Plasma Processes

Electrical Properties of Tantalum Oxide Films on Plasma Nitrided Silicon Substrates	22
<i>Y.-S. Lai and J.-S. Chen</i>	

Patterning with 193 nm Resists	31
<i>V. Bakshi, G. Smith, T. Alzaben, J. Beach, K. Spurlock, R. Berger, S.-T.L. Dorris, D. Holladay, and J. Woehl</i>	

Impact of Chemistry and Process Kit Characteristics on Etch Rate Non-Uniformities in Pattern Transfer	42
<i>M. Engelhardt</i>	

Atomic Layer Etching of Si(100) for Reducing Etching Damage	54
<i>B. J. Kim, S. H. Chung, and S. M. Cho</i>	

Inductively Coupled Plasma Etching of Pb(Zr _x Ti _{1-x})O ₃ Thin Films In Cl ₂ C ₂ F ₆ and HBr Plasmas	63
<i>C.W. Chung, Y.H. Byun, and H.I. Kim</i>	

Part II: Copper Interconnects and Low-k Interlevel Dielectric Films in ULSI Circuits

Copper Plating and CMP

Improved Determination of Additives in Acid Copper Plating Baths	69
<i>E. Kaiser, B. Newton, B. Joyce, and J. Rohrer</i>	
Integrated Multiscale Process Simulation: Reactor Scale to Grain Scale	77
<i>M.O. Bloomfield, K.E. Jansen, and T.S. Cale</i>	
Feature Scale Modeling of Transient Processes in Copper ECD	85
<i>S. Sen, M.O. Bloomfield, S. Soukane, and T.S. Cale</i>	
The Control of Topographical Selectivity in Pd-Activated Electroless Copper Deposition	95
<i>Y.-J. Oh, S.M. Cho, and C.-H. Chung</i>	
A Coulometric Technique for Monitoring the Morphology of Copper Electrodeposits	104
<i>L.D. Burke and A.M. O'Connell</i>	
Slurry Corrosion Behavior as It Relates to Improved Copper CMP/ Low-k CMP Process	116
<i>B. Mueller, T. Dyer, B. Palmer, I. Emesh, and P. Gopalan</i>	
The Effect of Additives in Cu CMP Slurry on Cu Polishing	126
<i>Y.-K. Hong, D.-H. Eom, and J.-G. Park</i>	
A Multi-Scale Elasto-Hydrodynamic Contact Model of Chemical Mechanical Planarization	138
<i>A. Kim, J.A. Tichy, and T.S. Cale</i>	
A New Chemical Mechanical Polishing Method Using the Frozen Etchant Pad	149
<i>Y.-J. Oh, G.-S. Park, S.Y. Park, T.W. Jung, and C.-H. Chun</i>	

Copper Integration and Reliability

Thermal Reactions of Cu/Fluorinated Silicon Oxide and Cu/Organic- Silicate Glasses on Silicon	158
<i>J.S. Jeng, J.-S. Chen, G. Lin, and J. Su</i>	

Electroless Nickel Ternary Alloy Deposition on SiO ₂ for Application to Diffusion Barrier Layer in Copper Interconnects Technology	167
<i>T. Osaka, N. Takano, T. Kurokawa, and K. Ueno</i>	
Low Dielectric Characteristics of Nanoporous Poly [Methyl Trimethoxy Silane-Cobis (Trimethoxy Silyl) Ethane]	177
<i>S.-K. Min, J.-M. Park, K. Song, B.-S. Kim, M.Y. Jin, J.-K. Lee, K.H. Char, D.Y. Yoon, and H.-W. Rhee</i>	
Adhesion Properties of PMSSQ-Based Low Dielectric Constant Films by Modified Edge Lift-Off Test	185
<i>Y.D. Kim, D.S. Sin, M.S. Moon, J.W. Kang, H.Y. Nam, B.K. Choi, K.K. Kang, and M.J. Ko</i>	
Functionalized Silica Aerogels/Xerogels for Low Dielectric Constant Applications	193
<i>H. Dong, R.A. Orozco-Teran, J.A. Roepsch, D.W. Mueller, and R.F. Reidy</i>	
Copper Patterning Using Plasma Oxidation or Anodization	204
<i>Y. Li and D.W. Hess</i>	
AUTHOR INDEX	211
SUBJECT INDEX	214