



## Surface Preparation and Cleaning Conference March 31 – April 2, 2008

### Monday, March 31<sup>st</sup>

- 8:00 AM – 5:00 PM **Optional Training Course: Basic and Advanced Topics of Surface Conditioning and Cleaning Processing for Integrated Circuit Manufacturing** - Karen Reinhardt  
(For more information see:  
<http://www.sematech.org/meetings/announcements/8170/course.htm>)
- 6:00 PM – 8:00 PM **Pre-Registration | Welcoming Reception**  
**Book Release – 2<sup>nd</sup> Edition of Handbook of Semiconductor Wafer Cleaning Technology**

### Tuesday, April 1<sup>st</sup>

#### Session One: Keynote / ITRS Challenges – Session Chair: Joel Barnett

- 9:00 AM **Introduction and Welcome** Barnett (SEMATECH)
- 9:15 **KEYNOTE: Milestones of Cleaning Technology** Kern and Reinhardt
- 9:50 **INVITED: ITRS 2007 Front End Processes - The End of Traditional Transistor Scaling - The Beginning of New Materials and New Structures** Butterbaugh (FSI International)
- 10:15 **INVITED: ESH and ITRS Impact on Advanced Cleans Development** Beu (ISMI)
- 10:40 **B R E A K**

#### Session Two: Pre Gate/EPI Surface preparation/Wet Etch – Session Chairs: Anthony Muscat, Jeff Butterbaugh

- 11:10 **INVITED: Surface Preparation and Nanotechnology** Nishi (Stanford University)
- 11:45 **INVITED: Sulfur, an Attractive Passivant for Germanium Channel Gate Stacks?** Frank (IBM)
- 12:10 PM **Gas Phase Surface Preparation of III-V Compound Semiconductors** Lie (University of Arizona)
- 12:30 **L U N C H**
- 2:00 **Effect of Chemical Air Filter for Wafer Storage before Epitaxial Growth** Wada (DNS)
- 2:20 **Bird's Beak Reduction by Chemical Oxide Removal in 70nm Flash Device** Wu (Powerchip)

### Session Three: Particle Removal from Wafers and Masks – Session Chairs: Glenn Gale, Martin Knotter

2:40	<b>Effect of Ionic Strength in Megasonic Cleaning: Possible Role of Electro-acoustic Effects</b>	Raghavan (Univ of Arizona)
3:00	<b>Collapse Behavior and Forces of Multi-stack Patterns</b>	Kim (Hanyang University)
3:20	<b>Impact of Particles in Ultra Pure Water in IC production</b>	Knotter (NXP Semiconductors)
3:40	<b>B R E A K</b>	
4:00	<b>Requirements and Unique Challenges in EUV Mask Cleaning Development</b>	Liang (Intel)
4:20	<b>Advanced EUV Mask Blank Cleaning Using State-of-the-Art UPW Filtration</b>	Gotlinsky (Pall)
4:40	<b>Application of HF for Removing Hard Particles from EUV Mask Blanks</b>	Eichenlaub (SEMATECH)
5:00	<b>Parametric Study of CO<sub>2</sub> Cryoaerosol Particles for Effective Non-Damaging Clean</b>	Banerjee (BOC)
5:20	<b>Current Results of the Plasma Assisted Cleaning by Electrostatics Experiment</b>	Ruzic (Univ of Illinois at Urbana-Champaign)
5:40 – 5:45	<b>Wrap Up/Additional Questions/Adjourn</b>	

### 6:00 – 8:00 Networking Reception and Poster Session

## Wednesday, April 2<sup>nd</sup>

### Session Four: Post Etch Cleans / Photoresist Removal – Session Chairs: Srinu Raghavan, Kuntack Lee

9:00 AM	<b>Introduction</b>	
9:05	<b>INVITED: Impact of Material Loss on Advanced CMOS Performance</b>	Kirkpatrick (TI)
9:40	<b>Study on Silicon Surface Oxidation of Post-Implant Resist Cleaning</b>	Han (Axcelis)
10:00	<b>Impact of CO<sub>2</sub> Cryogenic Pre-treatment on Ion Implanted Photoresist Wet Cleaning</b>	Malhouitre (BOC Eco-Snow Systems)
10:20	<b>Selection of ESH Solvents for the Wet Removal of Post-Etch Photoresists in Low-K Dielectrics Integration</b>	Vereecke (IMEC)
10:40	<b>B R E A K</b>	

**Session Five: Low-k Related Cleans – Session Chairs: Deborah Riley, Rick Reidy**

11:10	<b>Effects of Oxidizing and Reducing Plasmas Damage on Porous Low-k Film Surface Properties</b>	Reidy (Univ of North Texas)
11:30	<b>Silylation of Plasma-Damaged Low-K Films in Supercritical CO<sub>2</sub></b>	Lim (Pukyong National University)
11:50	<b>A Novel Short Contact Time Process for Cleaning Post Etch Residues From Advanced Low K Dielectric Dual Damascene Structures</b>	Bai (UMC)
12:10	<b>Removal of Post-Etch Photoresist and Side Wall Residues using Organic Solvent and additive compound combined with physical forces</b>	Le (IMEC)
12:30 PM	<b>L U N C H</b>	
<b>2:00</b>	<b>Panel Discussion: Front End Of Line Wafer Cleaning Solutions for 45 and 32 nm Moderator: Aaron Hand, Semiconductor International</b>	
3:00	<b>Break</b>	

**Session Six: Measurement and Impact of Contamination – Session Chair: Chris Sparks**

3:10	<b>Elimination of ESD-Related Defects Using DICO<sub>2</sub></b>	Halladay (Spansion)
3:30	<b>Imaging of contamination on wafers using a scanning surface potential difference measurement technique</b>	Danel (CEA-LETI)
3:50	<b>Dissemination of metallic contamination via solid contact</b>	Borde (CEA-LETI)

**Session Seven: CMP/Packaging – Session Chair: Joel Barnett**

4:10	<b>Development of Next-Generation Post-CMP Cleaners Using High Throughput Combinatorial Method</b>	Zhang (ATMI)
4:30	<b>Surface Preparation Challenges for Redistributive Chip Packaging</b>	Vessa (Freescale)
4:50	<b>Adjourn</b>	

## POSTER SESSION

Posters will be viewed at the Networking Reception on Tuesday, April 1<sup>st</sup> and on Wednesday, April 2<sup>nd</sup> the posters can be viewed in a visible area near the registration desk

1	<b>Photo Resist Removal Process Prior To Gate Oxidation</b>	Mitra (MAXIM Integrated Products)
2	<b>Development of TEOS/TOx Selective and Nonselective Etchants for IC Manufacture</b>	Collins (Sachem)
3	<b>Enhanced Cleaning Chemistry for Particle Removal and Damage-Free Cleans</b>	Hao (Sachem)
4	<b>Improved Silicon Etching for sub 65 nm Device Generations</b>	Stevens (SACHEM)
5	<b>Drying Impact on Surfaces for Next Technologies through Direct Bonding Investigation</b>	Le Tiec (CEA-LETI)
6	<b>Photomask Cleaning and Strip/Clean Solutions for 45 nm and below Technology Nodes</b>	Li (AMAT)
7	<b>Novel Dry Film Photoresist Removal for Wafer Level Package</b>	Peng (Anji Microelectronics)
8	<b>Novel Environment-Friendly Post Etch Post Ash Residue Removal for Aluminum IC Devices</b>	Peng (Anji Microelectronics)
9	<b>In-Situ and Real-Time Metrology during Cleaning, Rinsing, and Drying of Micro- and Nano-Structures</b>	Yan (University of Arizona)
10	<b>Effect of Shockwave on Particle Adhesion Force on Multilayer EUVL Mask</b>	Kim (Hanyang University)
11	<b>Effects of Size, Humidity, and Aging on Particle Removal</b>	Kim (Hanyang University)
12	<b>Optimization of a Post Via Wet Clean Process Using a Novel, Full Wafer Inspection Technique for Non-Visual Defects</b>	Scranton (Semitool)
13	<b>Non-Selective Etching of Doped Oxides in Wet Processes</b>	McLaughlin (ATMI)
14	<b>Improved Etching Method for Microelectronic Devices with Supercritical Carbon Dioxide</b>	Lim (Pukyong National University)
15	<b>Cleaning of HF/CO<sub>2</sub> Dry Etching Residues using Surfactants in Supercritical CO<sub>2</sub></b>	Jung (Pukyong National University)
16	<b>Stripping of Photoresist using Supercritical Carbon Dioxide Based Processes</b>	Lim (Pukyong National University)
17	<b>Word Line Rs Control by Wet Etching in 70nm Flash Device</b>	Wu (Powerchip)
18	<b>Evaluation of Surface Effects in EUV Mask Cleaning</b>	Shimomura (DNP)
19	<b>High Dose Implanted Photoresist Removal by Combination of Ozonolysis Process and Wet Chemistry</b>	Qiao (EKC Technology)
20	<b>A New Application of Vapor Phase Decomposition for Thermal Oxides</b>	Beebe (Technos International)