2008 International Symposium on Semiconductor Manufacturing

(ISSM 2008)

Tokyo, Japan
27 – 29 October 2008

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ISSM 2008 Program Schedule

The 1st day (Monday, October 27)

Tutorial Session — **Room: Century A/B**

9:30 **Tutorial Session AEC/APC**

Introduction of AEC/APC's history
Mr. Toshihiko Osada, Senior Manager, Fujitsu Microelectronics Limited

Manufacturing engineering and AEC/APC
Mr. Kensuke Uriga, CEO/President, Dura Systems Corporation

Application of control theory for AEC/APC in semiconductor fabrication
Mr. Hiroshi Shimizu, Director/Advanced Solution Department,
Advance Automation Company, Yamatake Corporation

9:00 **Tutorial Session ESH**

SUSTAINABILITY AND ESH ASPECTS OF ADVANCED SEMICONDUCTOR MANUFACTURING
Prof. Farhang Shadman, Regents Professor of Chemical and Environmental Engineering, the University of Arizona

Opening Remarks — **Room: Century**

13:00

Keynote Speech Session — **Room: Century**

13:20 **Challenges in The DRAM Business**
Mr.Yukio Sakamoto, President&CEO, Elpida Memory,Inc.

14:10 **The New Dynamics of Semiconductor Industry**
Dr. Tien Wu, Chief Operating Officer, Board of Directors, Advanced Semiconductor Engineering Inc.(ASE)

15:00 **Break**

Oral Session — **Room: Century A**

Highlight Session <Advanced Lithography Session>

15:10 **PE-O-097** **Phenomenology of ArF Photoresist Shrinkage Trends** 3
Benjamin Bunday, ISMI

15:30 **PE-O-044** **Lithography Hotspot Discovery at 70nm DRAM 300mm Fab : Process Window Qualification Using Design Based Binning** 7
Masami Aoki, KLA-Tencor

15:50 **YE-O-109** **From Simulation to Characterization - Integrated Approach for Self Aligned Double Patterning Defectitivity** 11
Amiad Conley, Applied Materials

16:10 **Author's interview & Break**

16:30 **PO-O-040** **Defect Reduction in ArF Immersion Lithography, Using Particle Trap Wafers with CVD Thin Films** 15
Yoshinori Matsui, NEC Electronics

16:50 **PO-O-154** **Defectivity readiness for immersion scanner qualification towards 32nm production** 19
Ofer Rotlevi, Applied Materials

17:10 **UC-O-110** **Defect Reducton in Advanced Lithography Processes Using a New Dual Functionality Filter** 22
Aiwen Wu, Entegris

17:30 **Author's interview & Break**

Oral Session **Room: Century B**

<Manufacturing Strategy and Management (MS)>

15:10 **MS-O-120** **Advanced quality control of quartz parts for semiconductor equipment based on the food industry's well-established QC methodology(HACCP)**..........29
Kazuya Dobashi, Tokyo Electron

15:30 **MS-O-059** **Highly Accurate Management in Dynamically Changing Fab** 33
Kazunori Imaoka, Spansion

15:50 **MS-O-066** **Accelerating R&D Learning: Cycle Time Reduction of A Technology Development Fab**
Mike Zhang, Spansion

16:10 **Author's interview & Break**

16:30 **MS-O-196** **Exploratory Study on Emerging Integrator Business Model in Engineering Chain of the Semiconductor Industry: Re-integration of Vertical Disintegration** 37
Yea-Huey Su, National Central University

16:50 **MS-O-199** **System Perspective on the Business Model Structures of TSMC and UMC: Foundations of Business Model Design for a Company**..........40
Yea-Huey Su, National Central University

17:10 **MS-O-202** **Method and System for Determining Optimal Wafer Sampling in Realtime Inline Monitoring and Experimental Design** 44
Kari Johnson, Micron Technology

17:30 **Author's interview & Break**

18:30 **ISSM Reception** **Room: Century**

12:00-13:00 / 15:00-20:00 **ISSM Networking Session** **Room: Crystal**

The 2nd day (Tuesday, October 28)

Keynote Speech Session — **Room: Century**

9:00 **Manufacturing Challenges in Automotive Nanoelectronics**
Dr. Reinhard Ploss, Member of the Management Board Operations,
Infineon Technologies AG

9:50 **Heterogeneous Integration and Clustered Virtual Vertical Integration for IC Industry**
Dr. Nicky C. C. Lu, Chairman/CEO, Etron Technology, Inc.

10:40 **Break**

Oral Session — **Room: Century A**

<Process and Metrology Equipment (PE)>

11:00 **PE-O-161** **Study of Ion implantation induced gate oxide quality problem and its solutions** 51
Kazuhisa Shiraki, OMRON

11:20 **PE-O-125** **Novel Single-Wafer, Single-Chamber Combined Dry and Wet System for Stripping and in-situ Cleaning of High-Dose Ion-Implanted Photoresists** 55
Yi-jung Kim, SEMES CO.,LTD

11:40 **PE-O-034** **Prediction of Film Thickness of Bottom Anti-Reflective Coating Based on In-Line Viscosity Measurement** 59
Masato Ota, Levitronix LLC

12:00 **Authors' Interview / Lunch Time**

Keynote Speech Session — **Room: Century**

13:20 **From Radical Innovation to Radical Collaboration - The Industry in Flux**
Dr. Bernard S. Meyerson, VP Strategic Alliances and CTO,
IBM Fellow, IBM Systems and Technology Group, IBM Corp..

14:10 **Break**

Oral Session — **Room: Century A**

Highlight Session <Advanced Metrology Session>

14:20 **PE-O-136** **In-Line Metrology for the 45 nm and 32 nm Nodes** 65
John Allgair, ISMI

14:40 **PE-O-016** **Measuring SADP Features of the 22nm Technology Node with Old Generation CD SEMs** 69
James Jiahua Yu, Applied Materials.

15:00 **PE-O-143** **Optical Ellipsometry for SiON Gate Production Monitoring** 72
Zhiming Jiang, KLA-Tencor

15:20 **YE-O-009** **Detection of Non Visible Poly Leakage Defect by e-Beam Inspection** 76
Shinya Ito, Spansion

15:40 **YE-O-200** **Challenges of Systematic Defect Control in Advanced DRAM Fab** 79
Luke Lin, Powerchip Semiconductor.

16:00 **YE-O-135** **Investigation and solution of bump-like killer defects** 83
Hong Xiao, Hermes Microvision.

16:20 **Author's interview & Break**

Oral Session **Room: Century B**

<Factory Design (FD)>

11:00 **FD-O-129** **Timed Move Command for improved on-time AMHS delivery** 89
Joerg Luebke, AMD

11:20 **FD-O-045** **Impacts of Small Lot Manufacturing on AMHS** 93
Hiroshi Kondo, Asyst Technologies Japan

11:40 **Authors' Interview / Lunch Time**

Keynote Speech Session **Room: Century**

13:20 **From Radical Innovation to Radical Collaboration - The Industry in Flux**
Dr. Bernard S. Meyerson, VP Strategic Alliances and CTO,
IBM Fellow, IBM Systems and Technology Group, IBM Corp.

14:10 **Break**

Oral Session **Room: Century B**

<Manufacturing Control and Execution (MC)>

14:20 **MC-O-012** **Fully automation control system for golden super hot lot in 300mm Fab** 99
TE Lung Wu, Rexchip Semiconductor

14:40 **MC-O-103** **Multiple Lot in One FOUP(MLiF) control and management in the 300mm Fab** 103
Nian-Wei Chan, Rexchip Semiconductor

15:00 **MC-O-019** **Throughput improvement with setup reduction focusing on process identification** 107
Yoshiaki Kobayashi, Renesas Technology

15:20 **MC-O-027** **Win-Win Approach Between Tool Productivity and Delivery Fulfillment By Carpool Execution** 111
Yih-Yi Lee, TSMC

15:40 **MC-O-047** **In-line inspection impact on Cycle Time and Yield** 115
Israel Tirkel, Ben-Gurion University

16:00 **MC-O-142** **Optimization of Diffusion Furnace Loading based on Substrate and Recipe Selection** 119
Ketan Khowala, On Semiconductor.

16:20 **Author's interview & Break**

The 2nd day (Tuesday, October 28)

Summary Presentation for Interactive Poster Session **Room: Century A**

Manufacturing Strategy and Management (MS), Factory Design (FD),
Manufacturing Control and Execution (MC), Environment, Safety and Health (ES),
Process and Metrology Equipment (PE), Design for Manufacturing (DM), Final Manufacturing (FM)

16:40 **MS-P-018** **Using DEA for Relative Efficiency Analysis of Wafer Fabrication Facilities** 125
Wan Ling Lin, TSMC

16:44 **MS-P-057** **Knowledge Sharing and Creation in the Semiconductor Equipment Industry** 129
Tsuyoshi Moriya, Tokyo Electron

16:48 **MS-P-122** **Improving Customer Responsiveness at Assembly Test Operations with the Application of Manufacturing Science** 133
Joan Tafoya, Intel

16:52 **MS-P-180** **Overall Equipment Efficiency (OEE) Improvements for Lithographic Tools in Wafer Fab** 137
Surein Gopal, Sii Terra

16:56 **FD-P-123** **Think Outside of the Integrated Circuit Fabricator Box** 145
Bevan Wu, BW & Associates

17:00 **MC-P-005** **TAT Cost Calculation of a Wafer in a Lot** 166
Hiroyuki Okumura, NEC Electronics

17:04 **MC-P-015** **Manual Material Handling System** 173
Wen-Cheng Chen, TSMC

17:08 **MC-P-032** **A Scanner Throughput Monitoring System (STMS) for Continuously Improving Litho-Cluster Productivity** 176
Wei Tai Chen, UMC

17:12 **MC-P-115** **Optimal Load Allocation Method for Keeping Target TAT - Application of Nonlinear Programming -** 184
Akira Ono, Renesas Technology

17:16 **MC-P-128** **A Study of Multiple Objectives Real-Time Dispatcher for Wafer Fabrication** 192
Asok Kumar, Sii Terra

17:20 **ES-P-035** **A Safer Alternative to Hydrofluoric Acid for Cleaning Epitaxial Silicon Reactor Exhaust Parts** 200
Tamir F. Ayad, P.E., ST Microelectronics

17:24 **PE-P-017** **Influence of deteriorated i-line filter on image quality of exposure tools, and its improvement** 208
Kazunori Okuyama, Fujitsu Microelectronics

17:28 **PE-P-067** **Study on Gas Replacement Time in Plasma Process Chamber for Realizing Ideal Down Flow of Gas without Disturbance** 214
Sadaharu Morishita, OMRON

17:32 **PE-P-127** **Monitoring and Managing System of Equipment Operation Status by Using Detailed Event Log Data Extracted from Exposure Tool** 222
Masatoshi Ikeda, Selete

17:36 **PE-P-173** **LOG data analysis and application for exposure tool** 226
Yukio Ibe, SANYO Electronics

17:40 **DM-P-119** **Robust Design with Direct Product of the L18 Orthogonal Arrays** 230
Nobuichi Kuramochi, Toshiba

17:44 **FM-P-002** **Invisible Ejector Characteristics** 238
Chandrasagaran, Moganasundaram, Intel

Summary Presentation for Interactive Poster Session **Room: Century B**

Process and Material Optimization (PO), Process Control and Monitoring (PC), Ultraclean Technology (UC), Yield Enhancement Methodology (YE)

16:40	**PO-P-113**	**Design Optimization of Lateral DMOS Using Genetic Algorithm** .... Hideto Mitsuhashi, New Japan Radio Co., Ltd	247
16:44	**PO-P-162**	**New era started by 200mm wafers of MEMS large scale production** .... Nobuyuki Iida, OMRON	255
16:48	**PO-P-174**	**BPSG boron spike generation investigated by chamber pressure monitoring** .... Toshiya Yokota, Spansion	263
16:52	**PO-P-195**	**Manufacturability Considerations in Double Patterning Lithography** .... Mircea Dusa, ASML	N/A
16:56	**PC-P-010**	**An Algorithm to Visualize Tool Difference Transitions in Semiconductor Fabrications** .... Tomoaki Kubo, Toshiba	271
17:00	**PC-P-033**	**Characterization Algorithm of Equipment-caused Particle Trend for LSI Yield Improvement** .... Masaaki Sugimoto, NEC Electronics	279
17:04	**PC-P-096**	**A Cost-Effective Alternative to Moisture Monitoring in Epitaxial Silicon Processing** .... Theodore Alfonso, ST Microelectronics	287
17:08	**PC-P-108**	**APC - The Consequent Next Step** .... Dr. Michael Brueggemann, Infineon	296
17:12	**PC-P-116**	**Photolithography Run-to-Run Metrology Control Using Multiple Algorithms for Mass Production Enhancement** .... Yung-Yao Lee, ProMos Technologies	304
17:16	**PC-P-150**	**FDC-Methods as Trigger for Predective Maintenance for Hot- and Wet-Process Equipment** .... Fritz Lindner, Infineon	312
17:20	**UC-P-157**	**Direct Monitoring of Semiconductor Wafer Cleaning Solutions Using Attenuated Total Reflection Far Ultraviolet Spectroscopy** .... Noboru Higashi, KURABO	319
17:24	**YE-P-020**	**A trend mining method for yield improvement based on trend in time series** .... Hidetaka Tsuda, Fujitsu LSI Technology Limited	327
17:28	**YE-P-105**	**In-line material analysis of 50nm defects by integration of Energy (EDX) and Wavelength (WDX) Dispersive X-ray analysis** .... Ronnie Porat, Applied Materials	335
17:32	**YE-P-160**	**Yield enhancement through new solutions for queue time containment** .... VERAN, AVTF	343
17:36	**YE-P-165**	**Optical Beam Enhanced Defect Detection With Electron Beam Inspection Tools** .... Yan Zhao, Hermes Microvision	350
17:40	**YE-P-185**	**Knowledge Engineering of Analysis Tool Application Processes for Yield Symptom Identification** .... Shi-Chung Chang, National Taiwan University	358

18:00-19:30 **Poster Core Session** **Room: Century A/B**

The 3rd day (Wednesday, October 29)

9:00 **Announcement ISSM 2009 by ISSM International Program Committee Chair**

Invited Speech Session — **Room: Century**

9:10 **AEC/APC**
Mr. Thomas Sonderman,
Vice President of Manufacturing Systems Technology (MST), AMD

9:50 **Break**

Oral Session — **Room: Century A**

Highlight Session <AEC/APC Session>

10:00 PC-O-106 **Interconnection failure caused by bath degradation in copper electroplating and its VM-FDC using mathematical model** 373
Shin-ichi Imai, Panasonic

10:20 PC-O-049 **Virtual Metrology Modeling for Plasma Etch Operations** 385
DeKong Zeng, University of California Berkeley

10:40 PC-O-130 **Comprehensive plug and play FD system realized Predictive Maintenance** 400
Katsuhisa Sakai, Renesas Technology

11:00 PC-O-042 **Centering value by using TSMRA prediction of CD process variation** 414
Shigenobu Murashima, NEC Semiconductors Kansai, Ltd

11:20 **Author's interview & Break**

<Process Control and Monitoring (PC)>

11:40 PC-O-003 **Focus and CD Control by Scatterometry Measurements for 65/45nm node devices** 428
Toshihide Kawachi, Renesas Technology

12:00 PC-O-004 **Advanced endpoint detection tool of NF3 remote plasma cleaning** 442
Kazuyuki Fujii, Renesas Technology

12:20 **Authors' Interview /Lunch Time**

13:20 PC-O-187 **BEOL parametric variation control with FDC data** 456
Hideki Matsuhashi, PDF Solutions, Inc

13:40 PC-O-041 **Approach of Continuous Device Reliability Improvement Activity in Manufacturing Stage** 469
Akira Inoue, NEC Electronics

14:00 **Authors' Interview Hours/Break**

<Final Manufacturing (FM)>

14:20 FM-O-053 **TLS-Dicing – the way to higher yield and throughput** 483
Hans-Ulrich Zuehlke, Jenoptik Automatisierungstechnik GmbH

14:40 FM-O-175 **Effect of type of foil and blade type to backside chipping in wafer level packages** 497
Peh Kok Hua, Infineon

15:00 FM-O-082 **300mm Wafer Stain Formation by Spin Etching** 510
Keisuke Sato, SEZ

15:20 **Authors' Interview /Break**

<Process and Material Optimization (PO)>

15:40 **PO-O-172** **Enhancing Electrical Properties of Nickel Silicide by Using Spike Anneal as the Second Rapid Thermal Anneal** 522
Takuya Futase, Renesas Technology Corp.

16:00 **PO-O-064** **Productivity Improvement for a Zr-base High-k Film Deposition using Thermal Chamber Cleaning Technique** 538
Hirohisa Yamazaki, Hitachi Kokusai Electric Inc.

16:20 **PO-O-025** **Achieving high gate quality by wet process improvement** 550
Masakazu Yasu, OMRON

16:40 **PO-O-141** **Application of quality engineering for Cu damascene etching** 564
Yusuke Oda, NEC Electronics

17:00 **PO-O-008** **High Reliable Characteristics in Manufacturing of MEMS Pressure Sensor** 577
Tetsuhiro Zushi, OMRON

17:20 **Authors' Interview**

Oral Session **Room: Century B**

<Design for Manufacturing (DM)>

10:00 **DM-O-093** **Electrically Testable CMP Characterization Vehicle for DFM, Process Transfer, and Process Development** 593
Jule Segal, Spansion

10:20 **DM-O-145** **Eliminating Stress-Induced Junction Leakages at Minimum Polysilicon-Active Space in Advanced Embedded High Voltage CMOS Technologies** 607
Yee Ming Chan, Systems on Silicon Manufacturing

10:40 **DM-O-118** **Optimal Process Design for on-chip Micro-lenses with Quality Engineering** 620
Yasuhisa Oomuro, Toshiba

11:00 **Author's interview & Break**

<Environment, Safety and Health (ES)>

11:20 **ES-O-132** **Technology-Enabled Employee Wellness: Emerging Trends, Applications, and Results** 634
Scott Lantz, Intel

11:40 **ES-O-131** **Overall Green Efficiency Enhancement with Manufacturing process optimization in KMO** 648
Tan Lin Sheng , Intel

12:00 **ES-O-182** **Going Green with On-Site Generated Fluorine: Sustainable Cleaning Agent for CVD Processes** 662
Paul Stockman, Linde Electronics

12:20 **Authors' Interview Hours/Lunch Time**

<Ultraclean Technology (UC)>

13:20 **UC-O-056:** **A Novel Filter Rating Method for less than 30 nm particle** 666
Takehito Mizuno, Nihon Pall Ltd.

13:40 **UC-O-117** **Minute-particle reduction by applying thermophoresis to semiconductor production equipment** 680
Hidefumi Matsui, Tokyo Electron

14:00 **Author's interview & Break**

<Yield Enhancement Methodology (YE)>

14:20 **YE-O-036** **Reducing contamination of particles reflected in turbo molecular pump** 693
Hiroyuki Kobayashi, Hitachi

14:40 **YE-O-085** **Qualification of inline FIB for Production - A Comprehensive "BEOL" Contamination Study** 711
Ronnie Porat, Applied Materials

15:00 **YE-O-114** **Integrated defect sampling method by using design attribute for high sensitivity inspection in 45nm production environment** 727
Yasuhiro Kaga, Toshiba

15:20 **YE-O-043** **EES Data Analysis of Lithography Trouble Detected by MapSSA** 738
Hiroshi Matsushita, Toshiba

15:40 **Author's interview & Break**

16:00 **YE-O-084** **Proposal of Backside Die-level Analysis** 752
Takeshi Yoshida, Renesas Technology

16:20 **YE-O-054** **High Voltage Gate Oxide Integrity for Embedded Flash Memory Devices** 764
Moey Chin Boon, Systems on Silicon Manufacturing

16:40 **YE-O-170** **Analysis of Deep Scratch** 778
Daisuke Takeda, Spansion

17:00 **YE-O-058** **Yield Monitoring System for Silicon Wafer** 792
Mayumi Kogure, Spansion

17:20 **Authors' Interview**