

2016 International Symposium on Semiconductor Manufacturing (ISSM 2016)

**Tokyo, Japan
12-13 December 2016**



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Symposium Schedule (Day-1)

ISSM2016

Monday, December 12th, 2016

8:30- Registration

Room: KFC Hall

9:00-9:10	Opening Remarks Shozo Saito, Chairman of Organizing Committee of ISSM2016 / Toshiba
9:10- 9:15	ISSM 2016 Shuichi Inoue, Chairman of Executive Committee of ISSM2016 / Renesas Semiconductor Manufacturing
9:15- 9:20	ISSM 2016 Program Outline Toshiyuki Uchino, Chairman of Program Committee of ISSM2016 / Hitachi Kokusai Electric
9:20-10:00	Keynote Speech: "Minimal Fab using half-inch wafers to reduce a fab investment to 1/1,000" Dr. Shiro Hara, Group Leader, Minimal System Group, Nanoelectronics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST) <i>Session Chair: Kazunori Kato, Advanced Interface Technology (AIT)</i>
10:00-10:40	Keynote Speech: "Toyota's Efforts Toward Realizing a Sustainable Society" Dr. Takahiro Ito, General Manager, Process Development Dept., Power Electronics Development Div. TOYOTA MOTOR CORPORATION <i>Session Chair: Shuichi Inoue, Renesas Semiconductor Manufacturing</i>
10:40-10:50	Break
10:50-11:30	Keynote Speech: "An overview of smart factories in Industry 4.0 implementation" Dr. Jonathan Chang, Senior Director, Backend, Factory Integration, SCM, Infineon Technologies <i>Session Chair: Shuichi Inoue, Renesas Semiconductor Manufacturing</i>
11:30-12:30	Lunch Break

Room1: KFC Hall

Highlight Session – IoT and Big Data Solution	
Session Co-Chairs: Shin-ichi Imai, Panasonic / C. Hsu, TSMC / SC Chang, National Taiwan University	
12:30	MC-O-24 : Data Mining Approaches to Optimize the Allocation of Production Resources in Semiconductor Wafer Fabrication 1 Chih-Min Yu, YouThought
12:50	PC-O-51 : ASML : a Decade of Big Data use 5 Rogier Kuijper, ASML
13:10	PC-O-62 : Distributed Database and Application Architecture for Big Data Solutions 8 Makoto Misaki, Panasonic
13:30	YE-O-50 : A Comprehensive Big-Data-Based" Monitoring System for Yield Enhancement in Semiconductor Manufacturing" 12 Kouta Nakata, Toshiba
13:50	Author's interview & Break
14:10	YE-O-13 : Visualization technique of maintenance work with motion capture sensors 15 Munehito Kagaya, Tokyo Electron
14:30	PC-O-71 : Unstructured Data Treatment for Big Data Solutions 19 Shintaro Sato, Panasonic
14:50	PC-O-60 : Automatic Property Visualization for Material Survey Support 23 Masayuki Okamoto, Toshiba
15:10	Author's Interview & Break
Session: Manufacturing Control and Execution (MC) & eMDC Invited	
Session Co-Chairs: Masami Aoki, KLA-Tencor Japan / Masahiro Shimbo, ON Semiconductor	
15:30	<eMDC2016 Invited> : Prioritization of Key In-Line Process Parameters for Electrical Characteristic Optimization of 16-nm High-k Metal Gate Bulk FinFET Devices N/A Dr. Ping-Hsun Su, National Chiao Tung University
15:50	<eMDC2016 Invited> MC-O-9 : Heuristic Methods for Q-time Bottleneck Dispatching N/A Ching-Lung Chang, Winbond Electronics
16:10	<eMDC2016 Invited> MC-O-19 : Generalized Overall Equipment Effectiveness for Integrated Scheduling and Process Control 27 Yu-Ting Kao, National Taiwan University
16:30	MC-O-43 : Dynamic Cycle-time Improvement through Big Data Analytics 31 Chih Ming CHAN, GlobalFoundries
16:50	MC-O-67 : Simultaneous Assignments of Multiple Types of Production Resources in Semiconductor Manufacturing 35 Hiroyuki Motomiya, University of Tsukuba
17:10	MC-O-73 : Optimal Production and Capacity Planning for Make-to-Order type Semiconductor Production Systems 39 Huizhen BU, University of Tsukuba
17:30	Author's Interview

Room 2: KFC Hall Annex

Session: Process and Material Optimization (PO)	
Session Co-Chairs: Kenji Watanabe, SanDisk / Yuji Yamada, Toshiba	
12:30	PO-O-21 : Plasma Erosion Behavior of Yttrium Oxide film formed by ADM 73 Hiroaki Ashizawa, TOTO
12:50	PO-O-22 : Sub-10 nm Metal Wire Circuit Fabrication using Directed Self-Assembly of Block Copolymers N/A Tsukasa Azuma, Evolving Nano Process Infrastructure Development Center (EIDEC)
13:10	PO-O-30 : EEPROM retention performance modulation by poly Si grain size & dopant distribution 77 Guai Guan Hong, GlobalFoundries
13:30	PO-O-31 : STI HDP process effect on yield of embedded memory processes 81 Guai Guan Hong, GlobalFoundries
13:50	Author's Interview & Break
14:10	PO-O-37 : Challenges for immersion lithography extension based on negative tone imaging (NTI) process 84 Toru Fujimori, FUJIFILM
14:30	PO-O-58 : Improvement of Particle Generation in a Dry Etching Apparatus 88 Tetsuyuki Matsumoto, Toshiba
14:50	PO-O-68 : Investigation of plasma-induced damage in silicon trench etching 91 Shuichi Kuboi, Toshiba
15:10	Author's Interview & Break
Session: Process Control and Monitoring (PC) & Environment, Safety and Health (ES)	
Session Co-Chairs: Shinsuke Mizuno, Applied Materials Japan / C. Hsu, TSMC	
15:30	PC-O-8 : Advanced Fault Detection Method for Chemical Mechanical Polisher 95 Yohei Hamaguchi, Renesas Semiconductor Manufacturing
15:50	PC-O-14 : Flash gate optimized process and integration for electrical performances requirement on advanced embedded memory 99 Agharben El Amine, EMSE-CMP
16:10	PC-O-42 : Etching Rate Drifts and Drops Induced by Metal Etching Processes N/A Kosuke Yamamoto, Tokyo Electron
16:30	PC-O-47 : Developing R2R controller by means of studying the sources of variability in plasma etch process 103 Agnès Roussy, EMSE-CMP
16:50	PC-O-59 : Process Optimizer for adjusting film thickness and in-film dopant concentration at the same time 107 Yuichi Takenaga, Tokyo Electron
17:10	ES-O-23 : Exploit the value of production data to discover opportunities for saving power consumption by production tools 111 Chih-Min Yu, YouThought
17:30	Author's Interview

17:50 Welcome Reception @ Foyer

Symposium Schedule (Day-2)

ISSM2016 Tuesday, December 13th, 2016

8:30- Registration

Room: KFC Hall

8:55	Introduction of Day 2 program Dr.Ayako Shimazaki, Executive Vice Chairman of Program Committee of ISSM2016 / Toshiba Nanoanalysis
9:00-10:40	Tutorial Session: Session Co-Chairs: Keiji Horioka, Applied Materials Japan / Dr.Ayako Shimazaki, Toshiba Nanoanalysis
9:00-9:50	"Changing semiconductor production management system" Tetsuya Kubo, Group Manager, Analysis & Data Management Promotion Group, It & Business Transformation Division, Toshiba Corporation Storage & Electronic Devices Solutions Company
9:50-10:40	"Semiconductors and their band diagrams" Prof. Shinichi Takagi, Professor, School of Engineering, The University of Tokyo
10:40-10:50	Break
10:50-11:30	Keynote Speech: "Toward Sustainable Nanometer Manufacturing Technologies in the 2020s" Dr. Jack Sun, VP of R&D and CTO, TSMC Session Chair : Robert Chien, TSMC
11:30-12:50	Evolution and revitalization of legacy Fabs Session Keynote Session Chair: Takeshi Akimoto, Renesas Semiconductor Manufacturing
11:30-12:10	"An overview of optimized automation of 8-inch fab manufacturing lines" Heinz Martin Esser, CEO, Fabmatics GmbH, Board Member of Silicon Saxony e.V
12:10-12:50	"Challenges and Innovations in a 200mm Wafer Fab" Peter Kailbauer, Senior Manager Fab support and strategy, Fab B, ams AG
12:50-13:30	Lunch Break
13:30-14:10	Keynote Speech: "New Era of Electrification and Vehicle Intelligence" Dr. Haruyoshi Kumura, Fellow, Nissan Motor Session Chair: Toshiyuki Uchino, Hitachi Kokusai Electric
14:10-14:40	3minutes Summary presentation by Interactive Poster Speakers Session Chair: Toshiharu Katayama, Renesas Semiconductor Manufacturing

Room1: KFC Hall

Highlight Session : High reliability device process technology for automotive and medical applications

Session Co-Chairs: Isamu Namose, OMRON AUTOMOTIVE ELECTRONICS / SC Chang, National Taiwan University

14:50	DM-O-11 : Layout-based Test Coverage Verification for High Reliability Devices 43 Yoshikazu Nagamura, Renesas Semiconductor Manufacturing
15:10	PC-O-55 : New Method of Screening Outlier(Expanded "PAT" during Package Test) 47 Tadashi Sakamoto, Japan Semiconductor
15:30	<eMDC2016 Invited> DM-O-63 : Fundamentals of side isolation LDMOS device with 0.35um CMOS compatible process N/A R.Deivasigamani, Asia University
15:50	DM-O-65 : Study on High-Side LDMOS Energy Capability Improvement 50 Yun-Jung Lin, Asia University
16:10	PO-O-72 : High-Temperature-Resistant Interconnection by Using Nickel Nano-particles for Power Devices Packaging. 54 Tomonori Iizuka, Waseda University
16:30	Author's Interview & Break
Session : Process & Metrology Equipment (PE) & Contamination Control and Ultraclean Technology (UC) & Yield Enhancement Methodology (YE) Session Co-Chairs: Kazunori Nemoto, Hitachi High-Technologies / Misako Saito, Tokyo Electron	
16:50	PE-O-10 : Contactless device for the fast conductivity characterization of a large range semiconductors 57 F.LOETE, Centralesupelec
17:10	UC-O-7 : Extended Contamination Control in Advanced Wafer Processing 61 Markus Pfeffer, Fraunhofer IISB
17:30	UC-O-18 : Investigation into behavior of mobile ions in storage device using ToF-SIMS 66 Nobuhito Kuge, Toshiba
17:50	YE-O-56 : STI Si Damage Defect Reduction by HDP Profile Optimizations 70 Shinya Ito, Texas Instruments
18:10	Author's Interview & Break

Room 2: KFC Hall Annex

Highlight Session : Evolution and revitalization of legacy Fabs

Session Co-Chairs:

Takeshi Akimoto, Renesas Semiconductor Manufacturing / Hiroyuki Inoue, Texas Instruments Japan

14:50	MS-O-16 : Fab Labor Productivity Improvement through a Combined Modeling Approach 115 Ariel Meyuhas, The MAX Group
15:10	PO-O-4 : A Theoretical Modeling of CMP: A Monte-Carlo Approach 120 Akira Endou, FUJIMI INCORPORATED
15:30	PE-O-34 : Metrologies of Behavior of Abrasives for Understanding and UPgrading CMP Process 124 Shohei Shima, EBARA
15:50	PO-O-5 : Development of novel CMP slurry for FEOL processes 128 Yasuyuki Yamato, FUJIMI INCORPORATED
16:10	UC-O-6 : Particle removal efficiency evaluation of filters in IPA 132 Tomoyuki Takakura, Nihon Pall
16:30	Author's Interview & Break
Highlight Session : Evolution and revitalization of legacy Fabs Session Co-Chairs: Takatoshi Yasui, TowerJazz Panasonic Semiconductor / Takahiro Tsuchiya, Mie Fujitsu Semiconductor	
16:50	UC-O-33 : Analysis method of metal contamination for isopropyl alcohol 136 Kazuya Dobashi, Tokyo Electron
17:10	YE-O-26 : Improving Process Tool Productivity by Correct Sealing Material Selection for Plasma Processes 140 Murat Gulcur, IDEX Sealing Solutions - PPE
17:30	UC-O-49 : Particle Adsorption onto Si Wafers in Ultrapure Water; its Mechanism and Effect of Carbon Dioxide 144 Koji Nakata, Kurita Water Industries
17:50	MC-O-41 : Revitalizing the 200mm Fabs through Automation 148 Chih Ming CHAN, GlobalFoundries
18:10	Author's Interview & Break

18:30-20:00

Poster Session & ISSM2016 Awards @ Foyer *ISSM2016 Awards starts from 19:30

Symposium Schedule (Day-2)

ISSM2016

Tuesday, December 13th, 2016

Interactive Poster Session

14:10-14:40 3-min Summary Presentation for Interactive Poster Session @ Room 1 : KFC Hall

Room1 : KFC Hall	
Session Chair: Toshiharu Katayama, Renesas Semiconductor Manufacturing	
ES-P-76	Development of an energy-saving controller for sub apparatus 152 Toshiya Ozaki, Toshiba
MS-P-77	Factory Integration Focus Area in the IRDS 156 Supika Mashiro, Tokyo Electron
PC-P-36	Next Generation FDC: Dynamic Full Trace Fault Detection 158 Tom Ho, BISTel, Inc
PC-P-38	Monitoring method for deposited film causing particles in mass-production plasma etching process using a load impedance monitoring system 161 Yuji Kasashima, National Institute of Advanced Industrial Science and Technology(AIST)
PO-P-15	Self-adjusting boron nitride mask for Reactive-Ion Etching 165 Konrad Schwanitz, WKA Alexander Wiegand SE & Co. KG
PO-P-17	Study for Phosphorus Contamination to High Voltage Transistors 169 LIANG, LI, GlobalFoundries
PO-P-61	Research and development of metal-based resist materials for EUVL N/A Julius Joseph Santillan, Evolving nano process Infrastructure Development Center (EIDEC)
PO-P-64	The Effect of Slurry pH and Particle Size on LiTaO₃ Polishing 173 Kazuki Moriyama, Nittahaas
PO-P-69	Electrical characterisation of Metal contacts to 4H-SiC Enhanced by Pre-Metallisation Surface Treatment 176 Stanley Luong, RMIT University