ISSM (International Symposium on Semiconductor Manufacturing)

History of ISSM (International Symposium on Semiconductor Manufacturing)

ISSM's mission is to achieve the continued prosperity of the semiconductor industry by bringing about breakthroughs in semiconductor manufacturing technologies through networking between engineers in research and development fields and their counterparts in the manufacturing field.

Year	1992 1	1993 2	1994 3	1995 4	1996 5	1997 6	1998 7	1999 8	2000 9	2001 10	2002 11	2003 12	2004 13	2005 14	2006 15	2007 16	2008 17	2009	2010 18	2011 19	2012 20	2013 21	2014 22	2015 23	2016 24	2017 25	2018 26	2019 27	2020 28	2022 29	2024 30
Place	Tokyo	Austin	Tokyo	Austin	Tokyo	SFO	Tokyo	SFO	Tokyo	San Jose	Tokyo	San Jose	Tokyo	San Jose	Tokyo	Santa Clara	Tokyo	Berlin with ASMC	Tokyo	Hsinchu with e-MDC	Tokyo	Hsinchu with e-MDC	Tokyo	Taipei with e-MDC	Tokyo	Hsinchu with e-MDC	Tokyo	Hsinchu with e-MDC	Tokyo	Tokyo	Tokyo
Attendance	NA	NA	NA	NA	1000	506	750	642	762	336	427	381	414	280	482	242	365	Cancelled	259	319	299	260	209	195	212	170	225	170	273	254	241
Number of Countries Represented					10	16	10	14	21	15	14	15	16	14	12	14	13		10	5	11	5	7	6	10	6	9	NA	5	13	5
# of submitted abstract (CFP)	Invited Only	Invited Only	52	102	100	260	180	223	178	309	220	278	201	221	181	191	126		78	62	74	46	54	26	59	28	60	NA	42	51	38
# of country for CFP			NA	NA	NA	17	13	11	11	12	14	18	17	14	12	13	12		7	4	9	8	7	4	11	6	9	NA	6	12	4
# of affiliation for CFP			NA	NA	NA	NA	NA	72	65	83	69	77	64	76	64	71	63		34	22	28	19	30	13	36	15	32	NA	31	39	25
Selected paper total			42	71	79	95	113	110	103	127	117	125	127	117	116	124	102		69	55	60	35	46	24	53	25	55	NA	39	37	36
Acceptance rate			81%	70%	50%	32%	49%	41%	60%	41%	53%	45%	63%	53%	64%	65%	81%		88%	89%	81%	76%	85%	92%	90%	89%	92%	NA	93%	73%	95%
Presented																															
Oral paper			30	50	47	64	57	66	40	69	58	63	64	61	63	58	60		45	52	34	35	32	24	44	25	44	17	37	32	30
Poster			12	21	32	31	56	44	63	58	59	62	63	56	53	54	33		20	3	21	0	14	0	9	0	11	2	0	5	6
Keynote/Invited					11	6	7	4	7	7	9	9	5	6	6	8	6		7	7	14	11	7	6	9	7	10	6	10	13	15

About ISSM
https://issm.semiconportal.net/about-issm/

ISSM Organization as of August 8, 2025

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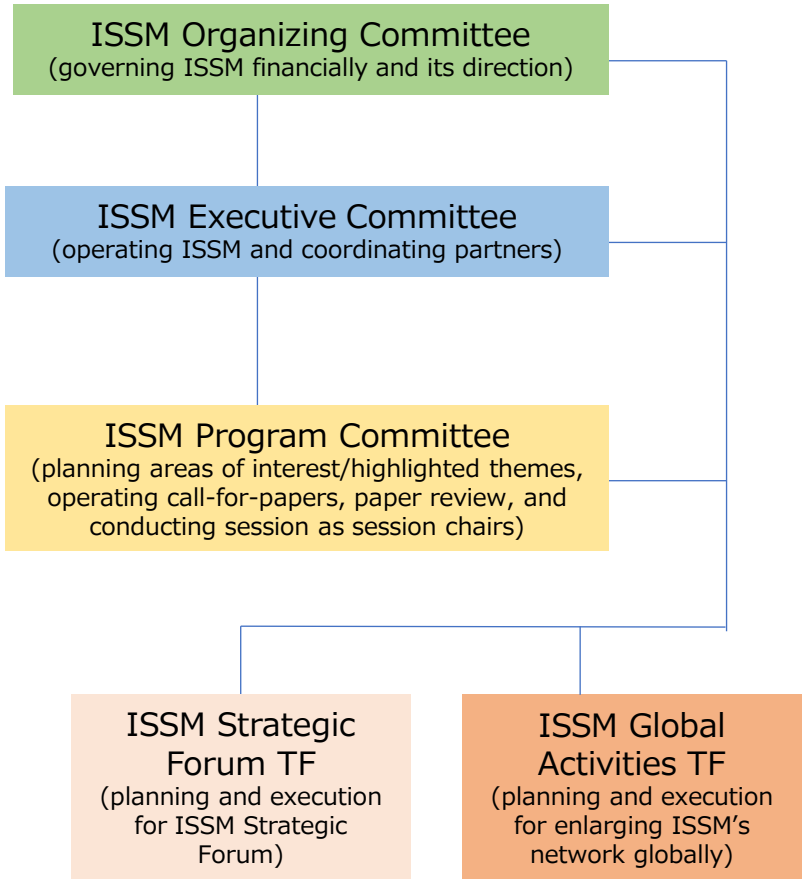
ISSM Organization



Previous ISSM Report

The 30th ISSM 2024 Summary

Date: Monday, December 9 and Tuesday, December 10, 2024

Venue: KFC Hall, Ryogoku, Tokyo, Japan

IEEE: Technical Sponsorship

ISSM 2024

ISSM has been contributing progress of semiconductor manufacturing technologies from a scientific perspective and has been conducting activities to share medium- and long-term improvement measures for common manufacturing issues and short-term and practicable solutions. ISSM2024 marks the 30-year anniversary. Recently, with the participation of material and equipment manufacturers, which are Japan's strength, in addition to device manufacturers, ISSM has expanded its presence as the only conference to discuss production and manufacturing technologies from process and equipment control to materials and devices, as well as plant operations, based on highly dimensional science driven by big data. ISSM aims to "design the future semiconductor manufacturing," and will boldly embrace the movement of new changes in semiconductor manufacturing and lead the innovative technologies in semiconductor production more than ever before.

Currently, there are dramatical changes in terms of economic security internationally, such as the restructure of the supply chain of cutting-edge logic semiconductor chips and the emergence of a foundry by a foundry. Under international cooperation, new factories are being actively constructed in Japan and other countries around the world. In order to realize the miniaturization of transistors with a secure operating margin, research and development are progressing on new device physics and the introduction of new materials are advancing. With the time-to-market supply of AI chips as a competitive advantage in the market, a new challenge to ultra-short TAT production is garnering attention. The transition from conventional semiconductor manufacturing mixed batch and wafer processes to full single-wafer manufacturing has become a hot topic, and the adoption of latest trends and innovative technologies, such as 3D package, chiplet integration and their manufacturing technologies, is also urgently needed.

Furthermore, in the green transformation of semiconductor factories to realize a decarbonized society, it is necessary to evolve into a line reconstruction and operation mode for manufacturing new structure devices by introducing energy-saving process equipment and new materials. In addition to the new directions mentioned above, common discussions and interactions among companies, academic societies, and research institutes included in the semiconductor value chain are becoming more significant for the utilization of generative AI beyond the conventional approach and semiconductor chip manufacturing in smart factories.

ISSM provides a forum for researchers and engineers to develop and discuss the direction, activities, and operations of production technologies ahead of the future by combining a bird's-eye view of broad industrial and technological trends with a management perspective.

◆ISSM 2024 areas of interest

Areas of Interest

Abstract will be accepted for each of following areas of interest.

Fab Management

* Factory Design (FD)
* Manufacturing Strategy (MS)
* Manufacturing Control and Execution (MC)
* Environment, Safety and Health, Carbon Neutral (ES)
* Intelligent Data Management (ID)

Process Integration

* Process/Material Optimization (PO)
* Yield Enhancement and Methodology (YE)
* Ultraclean Technology and Contamination Control (UC)
* Process Monitoring and Control Method (PC)
* Process/Metrology Equipment (PE)
* Design for Manufacturing (DM)
* Manufacturing Technology for Variety Devices (VD)

3D, Chiplets & Advanced Packaging

*3D, Chiplet, and Advanced Packaging Technology (TP)

ISSM 2024 Keynote Speakers

Semiconductor Ecosystem : India-Japan Strategic Partnership
His Excellency Sibi George, Ambassador of India to Japan
Ambassador of India to Japan

Japan's semiconductor strategy
Mr. Hidemichi Shimizu
Director of Device Industry & Semiconductor Strategy Office, Commerce and Information on Policy Bureau, Ministry of Economy, Trade and Industry

AI and Semiconductor Manufacturing – opportunities and challenges
Dr. Daisuke Okanohara
Chief Executive Researcher, Preferred Networks, Inc.

2nm Node Interconnect Technology and R&D toward 1.4nm Node and Beyond
Dr. Takeshi Nogami
Principal Research Staff Member, Lead Technologist / Strategist for BEOL Extendibility、IBM Research

Research and development in NTT Basic Research Laboratories towards IOWN and beyond
Dr. Katsuya Oguri
NTT Basic Research Laboratories, Nippon Telegraph and Telephone Corporation

Highly Accurate Via Formation Technologies for Advanced Packaging Process Using Plasma Dry Etching
Dr. Yasuhiro Morikawa
Manager, PE-Semiconductor Technology Research Department Institute of Advanced Technology, Research & Development HQ, ULVAC, Inc.

ISSM 2024 Tutorial Speakers, Special Session

Tutorial Speakers

50 years of thin film processing innovation in SC industry
Prof. Christophe Vallée
Professor, University at Albany, CNSE

Computational materials science studies on the search for potential dopant candidates.
Prof. Yasuteru Shigeta
Vice president and Executive Director for Research
Professor of Center for Computational Sciences, University of Tsukuba

The History and Future of Semiconductor Lithography: New Prospects Beyond the Limits of Pattern Shrinking
Dr. Tatsuhiko Higashiki
Assistant to General Manager, Research Strategy Planning Office, Frontier Technology R&D Institute, Kioxia

Special Speaker

Improving energy efficiency and development efficiency
Prof. Tadahiro Kuroda
University Professor, Office of University Professor, The University of Tokyo,
Chancellor, Prefectural University of Kumamoto

ISSM 2024 Panel Discussion

Panel Discussion on organized by ISSM committee
- **Human resources to vitalize Japan's semiconductor industry**

Moderator:
Shuichi Inoue, ATONARP INC.
Panelists:
Tadahiro Kuroda, The University of Tokyo/Prefectural University of Kumamoto
Kazunori Kato, Advanced Interface Technology Corporation
Kenji Miyake, Office Miyake
Shin-ichi Imai, Hitachi High-Tech

ISSM2024 Invited Speakers

ETDM2024

EDTM-215 : Reduction of contact resistance to PVD-MoS2 film using aluminum–scandium alloy (AlSc) edge contact
Prof. Hitoshi Wakabayashi, Institute of Science Tokyo

EDTM-496 : SiC Materials and Devices for Future Green Society
Prof. Shin-ichi Nishizawa, Kyushu University

EDTM-470 : Intermetallic compounds for future ULSI metallization
Prof. Junichi Koike, Tohoku University

IITC2024

IITC-11.5 : Bonding induced distortion in wafer-to-wafer bonding applications: how the scanner and Yieldstar can enable 3D integration
V.M. Blanco Carballo, IMEC

IITC-11.4 : Study and Control of the Distortion Induced by the Bonding Process for BSPDN Approaches
Karine Abadie, CEA-Leti

ISSM2024

PC-042 : Understanding Surface Reaction in PECVD Process by Combining In-situ Monitoring and Machine Learning
Makoto Sekine, Takayoshi Tsutsumi, Nagoya University

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GIGAPHOTON

GWJ GlobalWafers Japan

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HORIBA STEC

JSR Corporation

KFMI

KLA

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ROHM SEMICONDUCTOR

SCREEN

Shin-Etsu

SUMCO CORPORATION

SUMITOMO BAKELITE CO.,LTD.

STELLA CHEMIFA

Tama CHEMICALS

tok

TOMOE

TORAY

TPSCo

ULVAC

USJC

Nissan Chemical CORPORATION

IK INABATA

ISSM2024 Award Winners

★The papers of ISSM Award winners submitted to IEEE journal, Transactions on Semiconductor Manufacturing (TSM) are available on IEEE website.

Best of the Best Paper Award

PC-033 Rapid and Flexible Yield Analysis Powered by Large Language Model / Yutaka Sawai, Rohm

Best Papers Award

MC-044★ Deep Reinforcement Learning-based Effective Training Design for Dynamic Machine Allocation with Case Study of a Semiconductor Tool Group / Hsin-Tzu Hsu, National Taiwan University

PO-014★ Optimal Design of Wet Etching Bath for 3D Flash Memories Using Multi-Objective Bayesian Optimization / Miyuki Kouda, Kioxia

PO-023★ Space-filling experimental design for efficient Bayesian optimization / Shigeru Kinoshita, Kioxia

PO-007★ Vacancy-type defects in thin HfO2 layers probed by monoenergetic positron beams / Akira Uedono, University of Tsukuba

PO-021 Characterization of Hydrogen Desorption and Charge Traps in Silicon Nitride Films / Kiyoteru Kobayashi, ESCO, Ltd.

PO-032★ Improvement of P-base contact resistance in power MOSFETs and its impact on avalanche capability /Keisuke Miyamoto, TOSHIBA ELECTRONIC DEVICES & STORAGE

PC-034★ Proactive Control Setting of Real Time Equipment Monitoring for Raising End-of-Line Process Performance / Kuan-Chun Lin, National Taiwan University

PO-046★ Ar/N2 gas flow rate dependence on the ferroelectric HfN1.15 thin film formation by ECR-plasma sputtering / KANGBAI LI, Institute of Science Tokyo

PO-024 Investigation on the Relationship Etching Rate and Photoresist Surface Temperature during Reactive Atmospheric-pressure Thermal Plasma Jet Irradiation/ Kyohei Matsumoto, Hiroshima University

YE-013 Accuracy Improvement of Chip-on-Wafer Surface Defect Inspection by Deep Learning / Kazuto Kawakatsu, Sony Semiconductor Solutions

PC-015 Virtual Metrology using Transfer Learning with Domain Knowledge / Masaaki Takada, Toshiba

YE-018★ Evaluation of Metal Contamination Behavior on Silicon Dioxide Surface Rinsed with Deionized Water Containing Ultra-trace Metal in Single-wafer Cleaning Process/ Kyohei Tsutano, ORGANO

PC-043★ Fast Temperature Control in Semiconductor Vertical Furnace with Time-Optimal Control and Iterative Experiments / Christian Milleneuve Budiono, The University of Tokyo

PC-030★ Case Study on Modeling of Multiple Process Using Intermediate Variables for Digital Twin Modeling of a Semiconductor Manufacturing/ Ryosuke Okachi, Toyota Central R&D Labs., Inc.

Student Award

PC-043 Fast Temperature Control in Semiconductor Vertical Furnace with Time-Optimal Control and Iterative Experiments / Christian Milleneuve Budiono, The University of Tokyo

Best Student Poster Award

PO-040 Strong amorphization in In2O3-based flexible transparent conductive films by hydrogen incorporation and higher sputtering pressure / Kanta Kibishi, Kogakuin University

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