

Advanced Semiconductor Manufacturing Conference—ASMC 2024

SEMI and IEEE invite authors to submit a technical abstract to ASMC 2024. ASMC is the leading international technical conference for exploring solutions to improve the collective microelectronics manufacturing expertise. Solving the challenges presented by semiconductor manufacturing is an ongoing collaborative effort by customers, device makers, equipment and materials suppliers, and academia. The conference provides an unparalleled platform for semiconductor professionals to network and learn the latest information in the practical application of advanced manufacturing strategies and methodologies.

[CALL FOR ABSTRACTS](#)

ASMC is now soliciting abstracts from professionals involved in all areas of semiconductor manufacturing. Authors of selected papers will have an opportunity to present their work at the conference. They also may receive an invitation to publish their paper in a special section of ASMC 2024, which will be featured in IEEE Transactions on Semiconductor Manufacturing.

AWARDS

- **ASMC 2024 ENTEGRIS BEST PAPER AWARD**
All papers presented at ASMC will be considered for the ASMC 2024 Entegris Best Paper Award.
- **ASMC 2023 GLOBALFOUNDRIES BEST STUDENT PAPER**
Papers authored and presented by a student or student/professor will receive special consideration for the ASMC 2024 Outstanding Student Paper competition, sponsored by GLOBALFOUNDRIES. Please indicate in the abstract if the paper will be authored by a student.

**SUBMIT AN
ABSTRACT**

LOCATION

Hilton Albany
New York USA

QUESTIONS

Taylor Zhao
tzhao@semi.org

For templates and further instructions, see [Author Kit](#).

Your health and safety is our top priority. SEMI monitors developing federal, state and local health and safety recommendations and requirements to determine the most appropriate safety protocols for our in-person events. We will continue to monitor the guidance of public health authorities and government agencies going forward and will make appropriate adjustments in the future based on that guidance. Additional details or changes about policies and procedures will be posted on the event website as they are made available. If you have any questions, contact us.

With technical support from



IMPORTANT DATES (subject to change)

Abstracts Due:	October 20, 2023
Author Notification:	December 11, 2023
Manuscripts Due:	February 9, 2024
Final Manuscripts Due:	April 7, 2024
Presentations Due:	April 22, 2024
Conference Dates:	May 13-16, 2024

AUTHOR INSTRUCTIONS

Original, non-commercial, non-published works are being solicited in specific categories. Peer-reviewed papers are selected based on a clear outline of the problem, analysis, solution/results and conclusions. Papers co-authored between customers, device manufacturers, equipment or materials suppliers, and/or academic institutions (including students) that demonstrate innovative, practical solutions for advancing semiconductor manufacturing are highly encouraged. Authors should:

- Provide an extended abstract of no more than two pages (max. of 1000 words, MS Word or PDF) with supporting data, charts, figures embedded in the last page.
- Summarize the topic and theme in as much detail as allowed by the word count limitation. Include title, author(s), company affiliation(s), contact information, topic and five key words describing the work.
- The final paper, in the ASMC template found in [Author Kit](#) must show a complete set of data to support initial abstract.

Peer-reviewed papers are selected based on a clear outline of the problem, analysis, solution/results and conclusions. Authors who prefer to present in the poster session must indicate this request on their abstract.

3D/TSV: Packaging and Through Silicon Via

3D integration in general and associated topics like wire bonding, flip chip bonding (bump metallization), micro-bump bonding, C4 New Process, through wafer vias, silicon carrier; Novel approaches to global/local interconnect issues, power delivery, thermal management, and high-density interconnects.

AEPM: Advanced Equipment Processes and Materials

Development of new front- and back-end processes; characterization and integration of barrier layers, advanced gates, high- κ and low- κ dielectrics, isolators, optical and conducting materials; evaluation of novel substrates; methodologies for driving new materials from R&D to mass production.

AM: Advanced Metrology

Development of new metrology techniques and methodologies; *in-situ* monitoring methods; metrology for process control; measuring critical dimensions, overlay, films; metrology of next-generation materials, processes and architectures (TSV, FinFETs, EUV, etc.); scatterometry with reflectometry or ellipsometry; pros and cons of machine learning in measurement signal analysis wide-bandgap semiconductors; novel extension of existing metrology tools as well as evaluation of upcoming measurement technologies to meet HVM requirements.

AP/DFM: Advanced Patterning / Design for Manufacturability / Design-Technology Co-Optimization

Immersion, double/multiple patterning, and EUV lithography; advanced resolution enhancement techniques; source/mask optimization; alignment and overlay enhancement solutions; edge placement error measurement; advanced reticles; alternative patterning methods; directed self-assembly; feed-forward control solutions; high versus low volume manufacturing effects on lithography processes; computational lithography; Process models and process model files; optical proximity correction and verification; design rule creation and verification; DFM in support of yield learning through product cycle; early manufacturing involvement; integrated product and process development (IPPD). DTCO of process and design to improve yield, reliability and manufacturability and optimize device power, performance and area (PPA).

APC: Advanced Process Control

Advanced control techniques such as run-to-run control; model-based control; non-linear control methods; application of advanced statistical methods to control; advanced SPC techniques; fault detection and classification (FDC); virtual metrology; machine learning and artificial intelligence (ML/AI) monitoring and control.

CFM: Contamination Free Manufacturing

Backside contamination, ultraclean technologies, materials, control of mini-environments, FOUP cleanliness and control, vibration monitoring, vibration control, wafer and reticle carriers/transport, ESD control, EUV lithography.

DI: Defect Inspection and Reduction

New brightfield, darkfield, e-beam and other techniques and technologies for cost-effective yield control; process development using defect detection and management; new methodologies for detection, characterization, classification and disposition of defect counts, types and distributions; diagnostic techniques to correlate in-line inspection results to product yield and defectivity.

DM: Big Data Management and Mining

Fab and test floor data collection methods and analysis; data format, volume and interface challenges; fast drill-down to problem tools and sources; foundry-to-fabless data transfers and information issues; new visualization methods for improved data understanding; applying data mining techniques and machine learning based approaches to isolate and utilize critical information from large data volumes; data ownership.

DP: Discrete and Power Devices

Solutions manufacturers facing challenges other than smallest feature sizes, including analog/mixed-signal applications for automotive devices, power management and display drivers, RF communications, and wireless charging.

EO: Equipment Optimization

Efficiency/productivity measurements; optimizing and extending fab productivity within the framework of existing wafer sizes; cycle time reduction; cost reduction; best practices; customer-supplier continuous improvement programs; CMP Development; high mix/high-volume factories with high-equipment productivity; small-lot manufacturing and single-wafer/mini batch tools; fab conversions; integration of factory control systems into complete supply chain.

FA: Factory Automation

Automation in fab; probe; assembly and test factories; e-diagnostics; e-manufacturing; WIP management; scheduling; planning; logistics; modeling; productivity; supply chain management; manufacturing performance; capacity, metrics, supply/demand management; deployment, cycle time and time-to-market; fully automated factory and remote operation center equipment and equipment interfaces; data collection interfaces; automated material handling systems (AMHS) challenges and carriers; standards and standardization.

FE: The Fabless Experience

Challenges faced by fabless semiconductor companies; integrating material from multiple sources; strategies for managing risk due to supply shortages and out of spec. parts; foundry strategies for effectively supplying many customers; foundry methods for controlling costs for small orders; related topics of general interest to fabless semiconductor companies or foundries.

IE: Industrial Engineering

Facilities design and layout; equipment design and AMHS interactions; manufacturing systems design; statistics/quality; computer modeling; simulation; systems management; human factors in engineering; financial decision making; cost reduction; supply chain.

ISD: Innovative Silicon Devices and Processes

MEMS, PCM, silicon photonics, magnetic heads, micro displays, sensors, DLP, MRAM, organic semiconductor, silicon modulators, novel structures, carbon nanotube, graphene, interconnects; novel and emerging applications of existing process techniques, quantum computing and sensors, radiation imaging, harsh environment, nanowires.

LM: Lean Manufacturing

Establishing flow; standards and standard work; value stream mapping; Kaizen; Kaikaku; cycle times; WIP; 5S; continuous improvement; metrics, training within industry (TWI); waste reduction.

MS: Manufacturing for Sustainability

The role of environment; health and safety; emissions and effluents control; energy saving; recycling; safety and health; community involvement; ergonomics; zero emission; global environment protection; waste reduction; sustainability.

NS/NC: Non-silicon and Non-CMOS

SiC, GaN, GaAs, glass and quartz wafers, heterogenous devices, sub-200-mm manufacturing, analog/mixed signals, power devices, automotive, power management, flexible substrates, display drivers.

SM: Smart Manufacturing

Smart manufacturing systems, equipment and technologies; supply chain modeling and networks; system integration for manufacturing integration; crowdsourcing design for manufacturing; manufacturing process simulation and optimization; information technology; smart and intelligent manufacturing processes; cloud-enabled manufacturing systems and applications; industrial Internet of Things; next-generation robotics/automation; measurement and systems monitoring; business, health & safety, processes, and cost learnings.

YE: Yield Enhancement/Learning

Yield analysis tools and methods, including identifying root cause of yield loss and reliability fails; failure analysis; defect-to-yield correlation; zonal and spatial pattern analysis; slot signature analysis; use of volume diagnostics for pinpointing net failures; determination of critical particle size and types.

YM: Yield Methodologies

Yield monitoring and modeling accuracy; model types; critical area extraction techniques; yield-targeted data mining; modeling of systematic and parametric yield; process sector analysis; short-flow yield programs, machine learning and artificial intelligence (ML/AI) based algorithms.

WFD: Workforce Development

Soliciting abstracts on workforce development. Contributions from thought leaders, hiring managers and HR professionals regarding best practices, case studies and industry/academia/government partnerships to create a workforce to address current and future workforce needs throughout the semiconductor manufacturing supply chain are welcome. Abstracts related to opportunities and challenges in talent acquisition, hiring and retention, including development of a diverse and inclusive workforce, Organizational Learning; Training Methodologies; Retirement & Knowledge Transition; Systematic Cross-Training for Out-of-Industry; College, Education and Industry Co-Development are encouraged.