Silicon Wafer Europe TC Chapter

Meeting Summary and Minutes

SEMICON Europa 2024

Thursday, November 14, 09:00 – 11:00 CET

International Congress Center Messe München (ICM), München, Germany

TC Chapter Announcements

Next TC Chapter Meeting

SEMICON Europa 2025

ICM, München, Germany

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Peter Wagner (Self)
SEMI Staff: Laura Nguyen (SEMI HQ)

Company	*Last*	*First*	*Company*	*Last*	*First*
AST	*Hu*	*Hao*	Ohtomo Chemical	Fan	Jack
ASML	*Daware*	*Ajinkya*	Tokyo Electron	Mashiro	Supika
GlobalWafers	Sanna	Cristina	Self	Wagner	Peter
GlobalWafers	*Okano*	*Hirofumi*	Siltronic AG	Riedel	Frank
GlobalWafers	*Takeda*	*Ryuji*	SUMCO	Nakai	Tetsuya
KLA	*Haller*	*Kurt*	SEMI	Nguyen	Laura
Kobe Steel, Ltd.	*Morimoto*	*Tsutomu*	*SEMI Japan*	*Yoshida*	*Akiko*

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7192	Revision of SEMI M73-1013E (Reapproved 1019), Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles	**Passed**, as balloted.
7261	Reapproval of SEMI M53-0220, Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodisperse Reference Spheres on Unpatterned Semiconductor Wafer Surfaces	**Passed**, as balloted.
7262	Reapproval Of SEMI M58-1109 (Reapproved 0320) Test Method for Evaluating DMA Based Particle Deposition Systems and Processes	**Passed**, as balloted.

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7263	Line-Item Revision of SEMI M35-1114 (Reapproved 1019) Guide for Developing Specifications for Silicon Wafer Surface Features Detected by Automated Inspection	
L1	Removal of "Shall" in section 7 to conform with SEMI Style Manual.	**Passed**, as balloted.
7264	Line-Item Revision of SEMI M52-0923 Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations	
L1	Change §4.1 to "Acronyms and Abbreviations" and §4.2 to "Definitions" to conform to SEMI Standards Style and SEMI Standards Procedure Manuals, renumbering subsequent subsections as needed.	**Passed**, as balloted.
L2	Revise §4.2.3, the definition of LSE: include particle shape as well as material; use particle size instead of diameter; avoid use of "nmLSE" because it is not an SI unit. Revise NOTE 1 to conform to changes in §4.2.3.	**Passed**, as balloted.
L3	Eliminate references to 450mm wafer SEMI Standards M80, M158, and M159 in §3.1; eliminate mention of 450mm wafers from Table 2, line items 1.2.1, 1.2.2, and 1.2.6. Eliminate mention of 450 mm wafers from Table 3, line item 4.1; eliminate Table 3, line items 1.3 and 5.1.3 entirely.	**Passed**, as balloted.

NOTE 1: **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

NOTE 2: **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 5 Ratification Ballot Results

None

NOTE 1: **Passed** Ratification ballots will be submitted to SEMI publication for final processing.

NOTE 2: **Failed** Ratification ballots were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 7 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

None

NOTE 1: SNARFs and TFOFs are available for review on the SEMI Web site at:

http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

Table 8 Authorized Ballots

None

Table 9 SNARF(s) Granted a One-Year Extension

None

Table 10 SNARF(s) Canceled

None

Table 11 Standard(s) to receive Inactive Status

None

Table 12 New Action Items

None

Table 13 Previous Meeting Action Items

Item #	*Assigned to*	*Details*	*Status*
2023Nov-11	Ajinkya Daware (ASML), and Kevin Nguyen (SEMI staff)	To prepare revision of SEMI M1 (Subject: 300 mm wafer diameter changing tolerance ±200 um to ±100 um) ballot for adjudication at SEMICON West	Completed

1 Welcome, Reminders, and Introductions

Peter Wagner (Self) called the meeting to order at 09:03. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	To accept the previous meeting minutes as written.
By / 2nd:	By: Frank Riedel / Siltronic AG Second: Kurt Haller / KLA-Tencor
Discussion:	None
Vote:	5-0 in favor. Motion passed.

Attachment: Silicon Wafer EU TC Minutes 11162023

3 Liaison Reports

3.1 *Silicon Wafer Japan TC Chapter*

Tetsuya Nakai (SUMCO) reported for the Silicon Wafer Japan TC Chapter. Of note:

Meeting Information

- Last meeting
  - Thursday, August 29, 2024
  - OVTCCM / SEMI Japan, Tokyo, Japan (Hybrid)
- Next meeting
  - Thursday, December 12, 2024
  - Tokyo Big Sight, Tokyo, Japan/ OVTCCM (Hybrid) in conjunction with SEMICON Japan 2024

TC Chapter Leadership

- Cochairs: Tetsuya Nakai/ SUMCO, Ryuji Takeda/ Global Wafers Japan

New Task Force Formed

- Solid Metal Schottky Epi Wafer Resistivity WG (under the Japan Test Method TF)
    - Leader: Naoyuki Kawai (self)

Organization Chart *{refer to attachment for chart}*

Ballot Results: None

Authorized Activities + Ballots

- Int'l Epitaxial Wafers TF
    - SNARF 7291: Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers
    - Authorized for Cycle 8, 2024

Five-year Review

- SEMI M85-0120, Guide for the Measurement of Trace Metal Contamination on Silicon Wafer Surface by Inductively Coupled Plasma Mass Spectrometry
    - Status: Ongoing (SNARF to be submitted)
    - Assigned to: Int'l/Japan Test Method TF
- SEMI M88-0119, Practice for Sample Preparation Methods for Measuring Minority Carrier Diffusion Length in Silicon Wafers by Surface Photovoltage Methods
    - Status: Ongoing (SNARF to be submitted)
    - Assigned to: Int'l/Japan Test Method TF

Task Force Highlights

- International Advanced Wafer Geometry Task Force
    - SNARF for Doc.#7192, Revision of SEMI M73-1013, Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles was revised to incorporate the additional method proposed by SUMCO.
    - Developing Doc.#6983A, Revision to SEMI M49-0918 With Title Change To: Guide for Specifying Geometry Measurement Systems for Silicon Wafers for the 130 nm to 3 nm Technology Generations
    - There was a long discussion whether to include reference wafer values and therefore performance requirements for 11 to 3 nm TGs the same as for 16m.
    - The two versions of draft document will be prepared and further discussed at the next TF meeting.
- International/Japan Test Method Task Force
    - Drafting Doc.#6687, Revision to M51, Revision to M51-1012, Test Method for Characterizing Silicon Wafer by Gate Oxide Integrity, but the ballot document development plan has been rescheduled.
    - Drafting Doc.#6702, Revision to M60-1014, Test Method for Time Dependent Dielectric Breakdown Characteristics of SiO2 Films for Si Wafer Evaluation, and the ballot is expected to be submitted next Spring.
    - Revision work of M85-0120, Guide for the Measurement of Trace Metal Contamination on Silicon Wafer Surface by Inductively Coupled Plasma Mass Spectrometry started in May.
    - The TF is considering whether M88 should be revised.
    - Drafting Doc.#6570B, New Standard: Guide for Measuring Bulk Micro Defect Density and Denuded Zone Width in Annealed Silicon Wafers by a Laser-Scatter Tomography Technique
    - The Solid Metal Schottky Epi Wafer Resistivity Working Group was formed under the Japan Test Method TF to make a Japan Society of Newer Metal (JSNM) Standard document to SEMI Standard.
        - The said JSNM standard provides the test method for resistivity by reverse bias voltage dependence of the capacitance of a Schottky junction diode (C-V method), prepared on

epitaxial layers, uniformly doped in depth- direction, grown on mirror-polished silicon substrates.

- Naoyuki Kawa (Self) became a WG leader.

- International Epitaxial Wafers Task Force
  - SNARF for Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers was approved and Doc.#7291 was submitted for Cycle 8 to be reviewed at SEMICON Japan to address:
    1. to remove 450 mm referrals from this document
    2. to change 300 mm wafer diameter tolerance to ±0.10 mm in accordance with SEMI M1
    3. to include reference to SEMI M73 Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles
    4. to correct errors

New Business

- Deletion of 450mm description from SEMI M1 and 450mm related standards

No.	Standard Title	Task Force
SEMI M1	Specification for Polished Single Crystal Silicon Wafers	Int'l Polished Wafer TF (Hirofumi Okano: GWJ)
SEMI M49	Guide for Specifying Geometry Measurement Systems for Silicon Wafers for the 130 nm to 16 nm Technology Generations	Int'l Advanced Wafer Geometry TF (Masanori Yoshise: self)
SEMI M52	Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations	Int'l Automated Advanced Surface Inspection TF (Kurt Haller: KLA)
SEMI M62	Specification for Silicon Epitaxial Wafers	Int'l Epitaxial Wafer TF (Hitoshi Tsunoda: SEH)
SEMI M73	Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles	Int'l Advanced Wafer Geometry TF (Frank Riedel: Siltronic)

Staff Contact: Akiko Yoshida at ayoshida@semi.org

Attachment: JA SiW_Liaison Report_October 2024_R0_distr

3.2 *Silicon Wafer North America TC Chapter*

Kurt Haller (KLA) reported for the Silicon Wafer North America TC Chapter. Of note:

Meeting Information

- Last meeting
  - SEMICON West, San Francisco, CA, Tuesday, July 9, 2024
- Next meeting
  - SEMI HQ, Milpitas, CA, Feb 25, 2025

Organization Chart *{refer to attachment for chart}*

Ballot Results

- 7024: Line-Item Revision to SEMI M1-0918, Specification for Polished Single Crystal Silicon Wafers
  - Line Item 1 - Change the 300 diameter tolerance from ±0.2 mm to ±0.1mm
  - Passed as balloted

- 7163: Reapproval of SEMI MF1530-0707 (Reapproved 1018): Test Method for Measuring Flatness, Thickness, and Total Thickness Variation on Silicon Wafers by Automated Noncontact Scanning
    - Passed as balloted
- 7223: Reapproval of SEMI M35-1114 (Reapproved 1019) Guide for Developing Specifications for Silicon Wafer Surface Features Detected by Automated Inspection
    - Failed and returned to TF for rework
- 7224: Reapproval of SEMI MF1528-0413 (Reapproved 1018) Test Method for Measuring Boron Contamination in Heavily Doped N-Type Silicon Substrates by Secondary Ion Mass Spectrometry
    - Passed as balloted

SNARF Extension

- Doc. 6583, New Standard: Specification for SOI Wafers for RF Device Applications
    - July 9, 2025

Authorized Activities

#	Type	SC/TF/WG	Details
7192	SNARF Revision	Int'l AWG TF	Revision of SEMI M73-1013E (Reapproved 1019) Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles (SNARF was revised to include additional edge method)
7261	SNARF	Int'l ASI TF	Reapproval of SEMI M53-0220 Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodispere Reference Spheres on Unpatterned Semiconductor Wafer Surfaces
7262	SNARF	Int'l ASI TF	Reapproval of SEMI M58-1109 (Reapproved 0320)Test Method for Evaluating DMA Based Particle Deposition Systems and Processes
7263	SNARF	Int'l ASI TF	Line Item Revision of SEMI M35-1114 (Reapproved 1019) Guide for Developing Specifications for Silicon Wafer Surface Features Detected by Automated Inspection
7264	SNARF	Int'l ASI TF	Line Item Revision of SEMI M52-0923 - Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations
7265	SNARF	Int'l Test Methods TF	Reapproval of SEMI MF391-0310E Test Method for Minority Carrier Diffusion Length in Extrinsic Semiconductors by Measurement of Steady-State Surface Photovoltage
7266	SNARF	Int'l SOI TF	Reapproval of SEMI M71-0120 Specification for Silicon-on-Insulator (SOI) Wafers for CMOS LSI

Authorized Ballots

#	When	SC/TF/WG	Details
7261	Cycle 6 or 7 -2024	Int'l ASI TF	Reapproval of SEMI M53-0220 Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodispere Reference Spheres on Unpatterned Semiconductor Wafer Surfaces
7262	Cycle 6 or 7 -2024	Int'l ASI TF	Reapproval of SEMI M58-1109 (Reapproved 0320)Test Method for Evaluating DMA Based Particle Deposition Systems and Processes

7263	Cycle 6 or 7 -2024	Int'l ASI TF	Line Item Revision of SEMI M35-1114 (Reapproved 1019) Guide for Developing Specifications for Silicon Wafer Surface Features Detected by Automated Inspection
7264	Cycle 6 or 7 -2024	Int'l ASI TF	Line Item Revision of SEMI M52-0923 - Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations
7265	Cycle 6 or 7, -2024	Int'l Test Methods TF	Reapproval of SEMI MF391-0310E Test Method for Minority Carrier Diffusion Length in Extrinsic Semiconductors by Measurement of Steady-State Surface Photovoltage
7266	Cycle 6 or 7 -2024	Int'l SOI TF	Reapproval of SEMI M71-0120 Specification for Silicon-on-Insulator (SOI) Wafers for CMOS LSI

Task Force Highlights

- Int'l Advanced Wafer Geometry TF
    - Leader: Noel Poduje (SMS)
    - Ballot Development
        - 7192 - Revision of SEMI M73-1013 Test Method For Extracting Relevant Characteristics From Measured Wafer Edge Profiles
            - SNARF was revised to include Siltronic and SUMCO's method.
        - 6983A - Revision of SEMI M49-0918 With Title Change To: Guide for Specifying Geometry Measurement Systems for Silicon Wafers for the 130 nm to 3 nm Technology Generations
            - Yoshi led a review of the latest draft of the M49 revision.
- Int'l Automated Advance Surface Inspection TF
    - Leader: Kurt Haller (KLA)

    Ballot Development
    - Ballots issued in cycle 6 for review at SEMICON Europa
        - Doc. 7263, Line Item Revision of SEMI M35-1114 (Reapproved 1019) Guide for Developing Specifications for Silicon Wafer Surface Features Detected by Automated Inspection
        - Doc. 7264, Line Item Revision of SEMI M52-0923 - Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations
    - Ballots issued in cycle 6 for review at SEMICON Europa
        - 7261, Reapproval of SEMI M53-0220 Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodispere Reference Spheres on Unpatterned Semiconductor Wafer Surfaces
        - 7262, Reapproval of SEMI M58-1109 (Reapproved 0320)Test Method for Evaluating DMA Based Particle Deposition Systems and Processes
    - AFM Working Group
        - The WG, led by Judith Wittmann, continued to meet monthly in CY2024. Kurt gave a quick overview of the wafer set assembled from three participating wafer manufacturers and the measurements to be taken by them and four equipment makers. The wafers were shipped to GW's facility in South Korea on 3 July and were delivered on 8 July.
- Int'l SOI Wafer TF
    - Leader: Gerd Pfeiffer (SOITEC)
    - Ballot development

        - Drafting Doc. 6583, New Standard: Specification for SOI Wafers for RF Device Applications
    - 5 Year Review
        - SEMI M71-0120, Specification for Silicon-on-Insulator (SOI) Wafers for CMOS LSI
            - Issued for reapproval ballot for review at SEMICON Japan
- Int'l Test Methods TF
    - Leader: Dinesh Gupta (STA)
    - 5 Year Review Standards
    - SEMI MF391-0310E Test Method for Minority Carrier Diffusion Length in Extrinsic Semiconductors by Measurement of Steady-State Surface Photovoltage
        - Issued for reapproval ballot for review at SEMICON Japan
- Int'l Polished Wafer TF
    - Leader: TBD
    - Ballot Review
    - Doc. 7024, Line Item Revision to SEMI M1-0918, Specification for Polished Single Crystal Silicon Wafers
        - Re: 300mm wafer diameter tolerance reduction from ± 200um to ±100um
        - Passed as balloted.

Staff Contact: Kevin Nguyen at knguyen@semi.org

Attachment: NA Si Wafer TC Chapter Liaison Report August 2024

3.3 *SEMI Staff Report*

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2024 Calendar of Events

- SEMCON West (July 9-11; San Francisco, CA)
- SEMICON Taiwan (Sept 4-6; Taipei, Taiwan)
- SEMICON India (Sept 11-13; New Delhi, India)
- Energy Taiwan/X Net-Zero Taiwan (Oct 2-4; Taipei, Taiwan)
- SEMICON Europa (Nov 12-15; Munich, Germany)
- SEMICON Japan (December 11-13; Tokyo, Japan)

Global Standards Summit 2024: *Innovating Tomorrow: Standards for Future Factories*

- Inaugural SEMI Event @ SEMICON Japan 2024
    - Thursday, December 12 | 10:30 AM to 4:30 PM, Tokyo Big Sight, Conference Tower, Room 606
- Objective: Identify standards-critical areas and work towards an industry
- standardization strategy for the next 3- and 7-year time horizons.
- Session Topics:
    - Smart Manufacturing for Future Factories
    - Packaging Architectures & Materials
    - Environmental Sustainability
- Why Attend?
    - Learn – Hear issues critical to the future advancements of semiconductor manufacturing, what's happening to address them, as well as the standards needed to help enable.

- Influence – Contribute to the direction of standards development by providing inputs to help optimize future factories.
- Network – Organized networking events with other stakeholders from suppliers to solution providers to end customers.
- Discover – Explore what SEMICON Japan has to offer (e.g., Sessions on AI & Data, Sustainability, Manufacturing, Integration of Front & Back-end; Standards Meetings)

SEMICON West 2025-2030 ← **NEW!**

- **2025—October 7-9 | Phoenix Convention Center | Phoenix, AZ**
- 2026—October 13-15 | Moscone Center | San Francisco, CA
- **2027—October 12-14 | Phoenix Convention Center | Phoenix, AZ**
- 2028—October 10-12 | Moscone Center | San Francisco, CA
- **2029—October 9-11 | Phoenix Convention Center | Phoenix, AZ**
- 2030—October 29-31 | Moscone Center | San Francisco, CA

Europe Standards Meetings @ SEMICON Europa 2024

- November 12-14, 2024
- ICM (Internationales Congress Center München)
  - Meeting Room: Staffelsee (Mezzanine Level)
- TCs: Silicon Wafer, Gases, Liquid Chemicals, Compound Semiconductor Materials, ERSC

Critical Dates for SEMI Standards Ballots

- Cycle 8-2024: Ballot Submission Due: Oct 1/Voting Period: Oct 15 – Nov 14
- Cycle 9-2024: Ballot Submission Due: Nov 8/Voting Period: Nov 22 – Dec 23
- Cycle 1-2025: Ballot Submission Due: Dec 17, 2024/Voting Period: Jan 8 – Feb 7
- Cycle 2-2025: Ballot Submission Due: Jan 23/Voting Period: Feb 11 – Mar 13
- Cycle 3-2025: Ballot Submission Due: Mar 5/Voting Period: Mar 19 – Apr 18
- Cycle 4-2025: Ballot Submission Due: Mar 20/Voting Period: Apr 9 – May 9
- Cycle 5-2025: Ballot Submission Due: May 8/Voting Period: May 28 – June 27
- Cycle 6-2025: Ballot Submission Due: June 19/Voting Period: July 9 – Aug 8
- Cycle 7-2025: Ballot Submission Due: July 24/Voting Period: Aug 13 – Sep 12

https://www.semi.org/en/collaborate/standards/ballots

Standards Publications Report

Cycle	*New*	*Revised*	*Reapproved*	*Withdrawn*
July 2024	2	5	0	0
August 2024	0	5	4	0
September 2024	0	9	5	0
October 2024	2	1	0	0

Total in portfolio – 1,092 (includes 349 Inactive Standards)

New Standards

Cycle	*Designation*	*Title*	*Committee*	*Region*
July 2024	SEMI D85	Guide for the Tone Reproduction Curves for Transparent Displays	FPD - Metrology	TW
July 2024	SEMI FH4	Test Method and Guide for the Tactile Characteristics of Flexible Hybrid Electronics Materials and Products	Flexible Hybrid Electronics	JA
October 2024	SEMI E191	Specification for Computing Device Cybersecurity Status Reporting	Information & Control	NA
October 2024	SEMI E191.1	Specification for SECS-II Protocol for Computing Device Cybersecurity Status Reporting to Specification for Computing Device Cybersecurity Status Reporting	Information & Control	NA

Regulations & Procedure Manual Updates

- *Regulations* (Feb 20, 2024)
  - New definition of "Standards Document"
  - Clarification of confidential presentation materials
    - https://www.semi.org/sites/semi.org/files/2024-02/Standards%20Regulations%20February%2020%202024.pdf
- *Procedure Manual* (Feb 20, 2024)
  - The use of Connect@SEMI for TF management and document development depository (next slide)
- *Procedure Manual* (Sept 27, 2024) **New!**
  - Clarification of § 6.4.5.10 for discharging of a TF
  - New ¶ 6.4.5.11 Designation of a TF as Dormant.
    - https://www.semi.org/sites/semi.org/files/2024-09/Procedure%20Manual%20September%2027%2C%202024.pdf

Connect@SEMI Communities for all SEMI Standards Task Forces

- By Feb 2025, all Standards Task Forces shall use Connect@SEMI to host documents that are currently in development.
- Each Standards Task Force will have its own Community Page on Connect@SEMI.
- All program members may log in at: https://connect.semi.org
  - Enter their username and password (same as program membership log-in)
  - Contact staff if questions.
- Training materials are available at: https://www.semi.org/standards
  - Under Standards Developer Resources → Collaboration Tools (scroll to the bottom)

SEMIViews 4.0 – Available Now! *{refer to attachment graphics}*

- New SEMIViews platform launched on August 19, 2024.
- SEMIViews 4.0 Features include:
  - Upgraded user interface, Improved company user administration functions
  - Dynamic landing page, including feeds for new and revised Standards, upcoming meetings & events, and a reference center
  - Enhanced search functionality and navigation panel, New SEMI Volumes Library, User defined shortcuts via Collections, Favorites, and now, Bookmarks
- Additional features planned in the pipeline.

Attachment: Staff Report November 2024 v4-EU

4 Ballot Review

NOTE 1: TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7192, Revision of SEMI M73-1013E (Reapproved 1019), Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles

- The ballot passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7192_ProceduralReview

4.2 Document # 7261, Reapproval of SEMI M53-0220, Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodisperse Reference Spheres on Unpatterned Semiconductor Wafer Surfaces

- The ballot passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7261_ProceduralReview

4.3 Document # 7262, Reapproval Of SEMI M58-1109 (Reapproved 0320) Test Method For Evaluating DMA Based Particle Deposition Systems And Processes

- The ballot passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7262_ProceduralReview

4.4 Document # 7263, Line-Item Revision of SEMI M35-1114 (Reapproved 1019) Guide For Developing Specifications For Silicon Wafer Surface Features Detected By Automated Inspection

4.4.1 Line Item # 1: Removal of "Shall" in section 7 to conform with SEMI Style Manual.

- Line Item 1 passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7263_ProceduralReview

4.5 Document # 7264, Line-Item Revision of SEMI M52-0923 Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 5 nm Technology Generations

4.5.1 Line Item # 1: Change §4.1 to "Acronyms and Abbreviations" and §4.2 to "Definitions" to conform to SEMI Standards Style and SEMI Standards Procedure Manuals, renumbering subsequent subsections as needed.

4.5.2 Line Item # 2: Revise §4.2.3, the definition of LSE: include particle shape as well as material; use particle size instead of diameter; avoid use of "nmLSE" because it is not an SI unit. Revise NOTE 1 to conform to changes in §4.2.3.

4.5.3 Line Item # 3: Eliminate references to 450mm wafer SEMI Standards M80, M158, and M159 in §3.1; eliminate mention of 450mm wafers from Table 2, line items 1.2.1, 1.2.2, and 1.2.6. Eliminate mention of 450 mm wafers from Table 3, line item 4.1; eliminate Table 3, line items 1.3 and 5.1.3 entirely.

- Line Item 1, 2, and 3 passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7264_ProceduralReview

5 Subcommittee and Task Force Reports

5.1 *Int'l Advanced Wafer Geometry Task Force*

Frank Riedel (Siltronic AG) reported for this Task Force. This report contained information on the below.

Task Force Attendees *{Refer to attachment for list}*

Review of Prior Meeting and Working Groups

- Noel Poduje presented the review of recent NA TF activities in conjunction with Semicon West 2024
- Yoshise-san presented the review of recent Japan TF activities

Ballot Review

- No 5-Years Review due, however, on horizon are
    - SEMI M67-0720 - Test Method for Determining Wafer Near-Edge Geometry from a Measured Thickness Data Array Using the ESFQR, ESFQD, and ESBIR Metrics

- SEMI M68-0720 - Test Method for Determining Wafer Near-Edge Geometry from a Measured Height Data Array Using a Curvature Metric, ZDD
- Doc 7192: Revision of SEMI M73-1013E (Reapproved 1019): Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles
  - Adjudication in Silicon Wafer Committee TC meeting

Ballot Development

- Doc 6983A - Revision of SEMI M49-0918 With Title Change To: Guide for Specifying Geometry Measurement Systems for Silicon Wafers for the 130 nm to 3 nm Technology Generations
  - In August, Peter Wagner provided two new versions of Doc 6983A to AWG TF co-chairs edited along the lines discussed at Semicon West.
    - For the version denoted as PW1, Peter modified Tab. 3 so that now all specifications for TG < 16 nm are specified as "to be agreed on ….", and he added a note to section 2. He also removed some text from sections 1 and 2.
    - For the version denoted as PW2, Peter removed everything related to TG < 16 nm, also in Appendix 1. Other changes are as for PW1.
    - Background statements weren't edited.
- In October, Yoshise-san shared these versions with more members of AWG TF for discussions.
- Today we had lively discussion on whether entering values or not in Table 3 for TG < 16 nm, however, without concluding.

Action Items

- Put reapproval of SEMI M67 and M68 on the AWG TF agenda of NA standards meeting in February 2025 (Noel)
- The consensus of the TF is that the decision for no values or values in Table 3 of Doc 6983A should be voted on at the TF meeting at Semicon Japan in December 2024
- Provide finally a ballot-ready draft of document 6983A to NA standards meeting in February 2025

Attachment: AWG TF Europe Report_20241113

5.2 *Int'l Automated Advanced Surface Inspection Task Force*

Frank Riedel (Siltronic AG) reported for this Task Force on behalf of Judith Wittmann (Siltronic AG). This report contained information on the below.

Task Force Attendees *{Refer to attachment for list}*

Review of International Meetings

- Kurt Haller shortly summarized the latest meeting at SEMICON North America in July.
- The Si Wafer Technical Committee approved the four ballots to be reviewed in the TF meeting.
- No recent activities reported from Japan.

Ballot Review

- 7261, 7262, 7263, 7264
  - Adjudication in Silicon Wafer Committee TC meeting
  - Refer to § 4 of these minutes for more information

New Business

Status of AFM Roughness Working Group Activities were summarized by Judith Wittmann:

- AFM roughness, LLS haze working group started in Q2/2023
- Decision on Semicon Europe 2023 to start Round Robin

- 7 companies participate in the Round Robin (GlobalWafers, SUMCO, Siltronic AG, KLA, ParkSystems, Semilab, Nanosurf AG)
- We collected a set of 23 wafers provided by GlobalWafers, SUMCO and Siltronic AG
- RoundRobin startet in Q2/2024 with Haze measurements at KLA site
- Currently, the wafers are at SUMCO and will be shipped in November to Siltronic AG.
- We estimate to complete the Round Robin by End of Q1/2025.
- Our focus is on the data evaluation and a concept of data presentation as basis for the development of a new standard.

Action Items

- Next Meeting: February 24 to 27, 2025 North America Spring Standards Meeting

Attachment: Int'l Automated Advanced Surface Inspection TF meeting_13112024

5.3 *Int'l Polished Wafer Task Force*

Cristina Sanna (GlobalWafers) reported for this Task Force. This report contained information on the below.

Task Force Attendees *{Refer to attachment for list}*

TF Meeting Summary

- Proposal to issue a new SNARF for SEMI M1 to remove 450mm wafers references
- SNARF to be submitted during the Semicon Japan in December
- Next Meeting: SEMICON JAPAN, December 11 to 14, 2024

Attachment: IPW Semicon EU_13November2024

5.4 *Int'l Test Methods Task Force*

Frank Riedel (Siltronic AG) reported for this Task Force on behalf of Thomas Hager (Siltronic AG). This report contained information on the below.

Task Force Attendees *{Refer to attachment for list}*

Review of Prior Meeting and Working Groups

- Ryuji Takeda-san presented the review of recent Japan TF activities

Ballot Development

- Armin Kempf provided a status update on the Mercury (HG) Replacement Working Group activity
  - Refer to attachment for embedded file
- Doc 7162 is under development – New Standard: Test Method for epi-resistivity determination in Si wafers by Surface Charge Profiling is under development
  - SNARF was approved by SWC TC meeting at Semicon Europe November 2023

New Busniess

- New Japan Working Group: Epi resistivity measurement using hard (solid) metal contact CV method
  - Naoyuki J. Kawai, Ryuji Takeda reported on status
- Review of related SNARF for New Standard: Test Method for net carrier density and resistivity of silicon epitaxial layer by capacitance-voltage measurements with an evaporated metal Schottky diode

Attachment: Test Methods TF Europe Report_20241113

6 Old Business

None

7 New Business

None

8 Next Meeting and Adjournment

8.1 The next meeting is scheduled for SEMICON Europa 2025, date and time to be determined. Refer to http://www.semi.org/standards-events for the current list of events.

Adjournment: 10: 26.

Respectfully submitted by:

Laura Nguyen

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Minutes tentatively approved by:

Peter Wagner (Self), Co-chair	<Date approved>

Table 14 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Meetings Elements	7262_ProceduralReview
Silicon Wafer EU TC Minutes 11162023	7263_ProceduralReview
JA SiW_Liaison Report_October 2024_R0_distr	7264_ProceduralReview
NA Si Wafer TC Chapter Liaison Report August 2024	AWG TF Europe Report_20241113
Staff Report November 2024 v4-EU	Int'l Automated Advanced Surface Inspection TF meeting_13112024
7192_ProceduralReview	IPW Semicon EU_13November2024
7261_ProceduralReview	Test Methods TF Europe Report_20241113

#1 Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org. For additional information or to obtain individual attachments, please contact Laura Nguyen at the contact information above.