Table 1 Meeting Attendees

*Italics* indicate virtual participants

**Co-Chairs:** Friedrich Passek (Siltronic), Peter Wagner (Self), Werner Bergholz (Int’l Standards Consulting)

**SEMI Staff:** James Amano

<table>
<thead>
<tr>
<th>Company</th>
<th>Last</th>
<th>First</th>
<th>Company</th>
<th>Last</th>
<th>First</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int’l Standards Consulting</td>
<td>Bergholz</td>
<td>Werner</td>
<td>Tokyo Electron</td>
<td>Mashiro</td>
<td>Supika</td>
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<tr>
<td>Self</td>
<td>Wagner</td>
<td>Peter</td>
<td></td>
<td></td>
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<tr>
<td>Siltronic AG</td>
<td>Passek</td>
<td>Friedrich</td>
<td></td>
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<tr>
<td>Siltronic AG</td>
<td>Riedel</td>
<td>Frank</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SUMCO</td>
<td>Nakai</td>
<td>Tetsuya</td>
<td></td>
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</table>

Table 2 Leadership Changes

<table>
<thead>
<tr>
<th>WG/TF/SC/TC Name</th>
<th>Previous Leader</th>
<th>New Leader</th>
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<tbody>
<tr>
<td>None</td>
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Table 3 Committee Structure Changes

<table>
<thead>
<tr>
<th>Previous WG/TF/SC Name</th>
<th>New WG/TF/SC Name or Status Change</th>
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<tbody>
<tr>
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Table 4 Ballot Results

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6362</td>
<td>Line Item Revision of SEMI M53-0216 Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodisperse Reference Spheres on Unpatterned Semiconductor Wafer Surface</td>
<td>Passed as balloted</td>
</tr>
</tbody>
</table>

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

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

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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</table>
### Table 6 Authorized Activities

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

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>Reapproval</td>
<td>Int’l Advanced Wafer Geometry TF</td>
<td>Reapproval of SEMI M73: Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles</td>
</tr>
<tr>
<td>TBD</td>
<td>Revision</td>
<td>Int’l Advanced Wafer Geometry TF</td>
<td>Revision to SEMI M1: Remove the flatness and shape metrics illustrations from the Appendix 1 of M1 as well as any references to them in the main text and put them in an additional Related Information section</td>
</tr>
</tbody>
</table>

#1 SNARFs and TFOFs are available for review on the SEMI Web site at: [http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF](http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF)

### Table 7 Authorized Ballots

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>TF</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>TBD</td>
<td>Cycle 3 or 4 2019</td>
<td>Int’l Advanced Wafer Geometry TF</td>
<td>Reapproval of SEMI M73: Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles</td>
</tr>
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</table>

### Table 8 SNARF(s) Granted a One-Year Extension

<table>
<thead>
<tr>
<th>#</th>
<th>TF</th>
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<tbody>
<tr>
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### Table 9 SNARF(s) Abolished

<table>
<thead>
<tr>
<th>#</th>
<th>TF</th>
<th>Title</th>
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<tbody>
<tr>
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</table>

### Table 10 Standard(s) to receive Inactive Status

<table>
<thead>
<tr>
<th>Standard Designation</th>
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<tr>
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### Table 11 New Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>EUSW-1118-01</td>
<td>Kurt Haller</td>
<td>Kurt Haller to prepare M53 revision SNARF for approval at NA Spring 2019 meeting to clean up document based on Supika Mashiro’s comment</td>
</tr>
<tr>
<td>EUSW-1118-02</td>
<td>Silicon Wafer NA TC Chapter</td>
<td>NA Chapter to authorize M1 revision (related to shape and flatness metrics) for ballot at Spring 2019 meeting.</td>
</tr>
<tr>
<td>EUSW-1118-03</td>
<td>Kurt Haller</td>
<td>Kurt Haller to draft revision to M52 (doc #6363) and circulate the draft among TF members for review before SEMICON Japan</td>
</tr>
<tr>
<td>EUSW-1118-04</td>
<td>Kurt Haller</td>
<td>Kurt Haller to prepare SNARF to revise M58 for approval at SEMICON Japan</td>
</tr>
<tr>
<td>EUSW-1118-05</td>
<td>Kevin Nguyen/SEMI Staff</td>
<td>Kevin Nguyen to prepare recommendation on Silicon Wafer Standards that should be considered for “Inactive” status.</td>
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</table>
Table 12 Previous Meeting Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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</table>

1 Welcome, Reminders, and Introductions
Friedrich Passek called the meeting to order at 14:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Elements_August2018.ppt

2 Review of Previous Meeting Minutes
The TC Chapter reviewed the minutes of the previous meeting, held at SEMICON Europa 2017.

Motion: To approve the minutes as written.
By / 2nd: Peter Wagner/Frank Riedel
Discussion: None
Vote: 5-0

Attachment: EU Silicon Wafer 20171115 v1.pdf

3 Liaison Reports
3.1 Japan TC Chapter
Tetsuya Nakai reported for the Silicon Wafer Japan TC Chapter. Of note:

- Last meeting
  - Oct. 2, 2018 in conjunction with the SEMI Standards Japan Fall Meetings
  - SEMI Japan, Tokyo, Japan
- Next meeting
  - Dec. 13, 2018 during SEMICON Japan 2018
  - Conference Tower, Tokyo Big Sight, Tokyo, Japan
- New SNARF
  - Revision of M51 Test Method For Time Zero Dielectric Breakdown Characteristics Of Amorphous SiO2 Films For Silicon Wafer Evaluation
- New Auxiliary Information
  - GCS Approval: done
  - A&R: next cycle (late November)
- Abolished SNARFs
  - 5770, New Standard: Guide For Measuring Bulk Micro Defect Density and Denuded Zone Width in Annealed Silicon Wafers
    - Activity to be divided into two SNARFs
• 6087, New Standard: Test method for nitrogen content in silicon by charged particle activation analysis

- Five-year review
  - M51-1012: Test Method for Characterizing Silicon Wafer by Gate Oxide Integrity
    - Gate Oxide Integrity WG working on revision

**Attachment:** JA_SI_Liaison_20181113 v0.2.ppt

### 3.2 North America TC Chapter

James Amano reported for the Silicon Wafer NA TC Chapter. Of note:

- Last meeting
  - Tuesday, July 10, 2018, SEMICON West
  - San Francisco Marriott Marquis, CA

- Next meeting
  - Tuesday, April 2, 2019, NA Spring
  - Milpitas, CA

- New SNARF
  - 6425: Line Item Revision to SEMI M1, Specification for Polished Single Crystal Silicon Wafer (Removal of PV13)

- Authorized Ballots
  - 6362: Line Item Revision of SEMI M53-0418, Practice For Calibrating Scanning Surface Inspection Systems Using Certified Depositions Of Monodisperse Reference Spheres On Unpatterned Semiconductor Wafer Surfaces (Revision to Related Information 2)

- Terminology
  - GCS had a meeting and made the following decisions:
    - Reaffirmed to make no change to SEMI M59, which will let go inactive when it is due for 5 year in October of 2019
    - New term or revised term on any M or MF standards will not be added to M59
    - When each M or MF standard is revised, M59 reference should be removed and the new reference should point to Compilation of Term (COT)
    - Terminology TF will remain inactive on the org. chart

**Attachment:** NA Silicon Wafer TC Liaison Report July 2018 v1.ppt

### 3.3 SEMI Staff Report

James Amano (SEMI) gave the SEMI Staff Report. Of note:

- Critical Dates for Upcoming Ballot Cycles

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle 8</td>
<td>Oct 12</td>
<td>Jan 3</td>
</tr>
<tr>
<td>Cycle 9</td>
<td>Nov 14</td>
<td>Feb 1</td>
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<td>Cycle 1</td>
<td>Oct 26</td>
<td>Jan 16</td>
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<tr>
<td>Cycle 2</td>
<td>Nov 28</td>
<td>Feb 15</td>
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<tr>
<td></td>
<td>Nov 26</td>
<td>Feb 15</td>
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<tr>
<td></td>
<td>Dec 28</td>
<td>March 18</td>
</tr>
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**November 14, 2018**
Munich, Germany
- New Forms, Regulations & Procedure Manual
  - Regulations (June 8, 2018)
  - Procedure Manual (June 8, 2018)
  - TFOF & SNARF
  - Ballot Review Templates
  - Meeting Required Elements
  - All online at: www.semi.org/standards under “Resources”

- Rules for Handling Trademarks
  - Sections 16.4.1 and 16.4.4 of the recently revised Regulations contain requirements for the use of trademarks in published Documents.
  - Existing Documents have been found that contain trademarks for items such as materials, software protocols, and equipment.
  - All TC Chapters should review their Documents at the time a revision or reapproval ballot is planned to determine if a trademark is used and, if so, whether its use is justified, properly represented, and that a footnote references the trademark owner.
  - Failure to do so could jeopardize ballot approval.

Attachment:  Staff Report Nov 2018 v2.ppt

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 number for each balloted document is provided under each ballot review section below.

4.1 Document # 6362, Line Item Revision of SEMI M53-0216 Practice for Calibrating Scanning Surface Inspection Systems Using Certified Depositions of Monodispere Reference Spheres on Unpatterned Semiconductor Wafer

Approved as balloted. Comment from Supika Mashiro to be taken up by TF as new business.

Action Item: Kurt Haller to prepare SNARF for approval at NA Spring 2019 meeting to clean up document based on Supika Mashiro’s comment

Attachment: 6362ProceduralReview.doc

5 Subcommittee and Task Force Reports

5.1 Advanced Wafer Geometry Task Force

Frank Riedel reported.

- Ballot Development
    - No update on status of the document. Kurt Haller (KLA Tencor) will follow up.
- New Business
  - Five-Year Review of SEMI M73-1013: Test Methods for Extracting Relevant Characteristics from Measured Wafer Edge Profiles
    - TF recommends re-approval because the standard is still technically correct
    - However, the incorrect Title of SEMI M73 calls for a PIP first according to SEMI Standard Procedure Manual Appendix A4-1.8 (pdf as of June 8, 2018) as Mashiro-san pointed out
    - Test Methods to be changed to Test Method. Werner Bergholz has submitted a Publication Improvement Proposal (PIP) form to take care of this.

  Motion: To approve the SNARF for reapproval of SEMI M73-1013  
  By / 2nd: Peter Wagner/Werner Bergholz  
  Discussion: None  
  Vote: 5-0

  Motion: To issue a reapproval ballot for M73 in Cycle 3 or 4 of 2019 for adjudication at SEMICON West 2019.  
  By / 2nd: Peter Wagner/Werner Bergholz  
  Discussion: None  
  Vote: 5-0

  o Revision to M1

    - Peter Wagner submitted a SNARF to remove the flatness and shape metrics illustrations from the Appendix 1 of M1 as well as any references to them in the main text and put them in an additional Related Information section.

  Motion: To approve the SNARF for revision to M1  
  By / 2nd: Peter Wagner/Werner Bergholz  
  Discussion: None  
  Vote: 5-0

  Action Item: NA Chapter to authorize M1 revision for ballot at Spring 2019 meeting.

  Attachment: AWG TF Europe Report_20181113.ppt

5.2 Advanced Surface Inspection Task Force

Frank Riedel reported.

- As described in the Ballot Review section above, ballot 6362 was approved by the TC Chapter at today’s meeting.
- 6363 Five-year review: SEMI M52-0214 guide for specifying scanning surface inspection systems for silicon wafers for the 130 nm to 11 nm technology generations
  - Kurt explained his view on the scope of a revision as follows: “The 02-14 version of this Guide outlined and recommended basic specifications for SSIS equipment for use with in 130 to 11 nm technology nodes, forecast by the International Roadmap for Semiconductors (ITRS), 2010 edition. Since then, nodal nanometer designations have diverged from actual critical sizes of defects affecting device structures, electrical yield, and ultimate reliability. Meanwhile, novel devices, 3D structures, and other innovations also blur a nodes name and SSIS performance. Accordingly, this version of the Guide drops the concept of technology generations. For continuity, all previously recommended detection sensitivity, capture rate, and throughput specifications have been retained, with extension to devices having critical physical dimensions as small as 5 nm.”
Action Item: Kurt Haller to draft a revised Doc #6363 reflecting his reasoning, and to circulate the draft among TF members for review before Semicon Japan

- Five-year review: SEMI M58-1109 R 0614: Test Method For Evaluating DMA Based Particle Deposition Systems And Processes
  - Reapproval of the document as is does not appear to be appropriate
  - There are issues related to expired certificates of few PSL PSMs as well as to traceability of material from certain sources
- Action Item: Kurt Haller to prepare SNARF to revise M58 for approval at SEMICON Japan

Attachment: IASITF Europe Report_20181113.ppt

5.3 Polished Wafer Task Force

- Ballot Development
  - 6425 - Line Item Revision to SEMI M1 Specification for Polished Single Crystal Silicon Wafers: Remove SEMI PV13 as a reference in SEMI M1
    - John Valley made a good proposal written prior to this TF meeting: “As we remove PV13 from M1 we should add a footnote to Dieter Schroder’s textbook, SEMICONDUCTOR MATERIAL AND DEVICE CHARACTERIZATION, chapter 7, “Carrier Lifetimes,” and references therein. The third edition is still widely available and was updated prior to publication in 2006.”

5.4 GCS

- Friedrich Passek reported that the GCS is seeking guidance from staff regarding which published Standards are not being used and should be allowed to go “Inactive.”
- Action Item: Kevin Nguyen to prepare recommendation on Silicon Wafer Standards that should be considered for “Inactive” status.

Attachment: IPW TF Europe Report_20181113.ppt

6 Old Business

None

7 New Business

7.1 JSNM

Tetsuya Nakai addressed the committee on this topic.

- The Japan Society of New Materials (JSNM) has a “Material Standards Study Group for Semiconductor Supply Chain” that is receiving support from the Japan Ministry of Economy, Trade, and Industry (METI). The Study Group is planning to survey European power device manufacturers as well as Siltronic regarding standardization opportunities.
- JSNM will provide an update to the Test Methods TF and Silicon Wafer Committee during SEMICON Japan.
- Supika Mashiro mentioned that the ultimate objective of JSNM is an ISO Standard.

8 Next Meeting and Adjournment

The next meeting is scheduled SEMICON Europa 2019 in Munich, Germany. See http://www.semi.org/standards-events for the current list of events.
Adjournment: 15:00.

Submitted by:
James Amano
SEMI HQ

Minutes tentatively approved by:

| Werner Bergholz (Int'l Standards Consulting), Co-chair | <Date approved> November 22, 2018 |
| Peter Wagner (Self), Co-chair | <Date approved> November 25, 2018 |

### Table 13 Index of Available Attachments

<table>
<thead>
<tr>
<th>Title</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>SEMI Standards Required Elements_August2018.ppt</td>
<td>6362ProceduralReview.doc</td>
</tr>
<tr>
<td>EU Silicon Wafer 20171115 v1.pdf</td>
<td>AWG TF Europe Report_20181113.ppt</td>
</tr>
<tr>
<td>JA_Si_Liaison_20181113 v0.2.ppt</td>
<td>IASI TF Europe Report_20181113.ppt</td>
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<tr>
<td>NA Silicon Wafer TC Liaison Report July 2018 v1.ppt</td>
<td>IPW TF Europe Report_20181113.ppt</td>
</tr>
<tr>
<td>Staff Report Nov 2018 v2.ppt</td>
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</table>

#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 [SEMI Staff Name] at the contact information above.