Japan Silicon Wafer TC Chapter
Meeting Summary and Minutes

Standards Meeting during SEMICON Japan 2016
Thursday, December 15, 2016, 13:00-17:00
Tokyo Big Sight, Tokyo, Japan

Next TC Chapter Meeting
Friday, March 10, 2016, 14:00-17:00,
Meeting Room, SEMI Japan Office, Tokyo, Japan

Table 1 Meeting Attendees
Co-Chairs: Naoyuki Kawai (University of Tokyo), Tetsuya Nakai (SUMCO)
SEMI Staff: Junko Collins (SEMI Japan)

<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>University of Tokyo</td>
<td>Kawai</td>
<td>Naoyuki</td>
<td>Global Wafers Japan</td>
<td>Takeda</td>
<td>Ryuji</td>
</tr>
<tr>
<td>SUMCO</td>
<td>Nakai</td>
<td>Tetsuya</td>
<td>Shin’Etsu-Handotai</td>
<td>Toda</td>
<td>Naohisa</td>
</tr>
<tr>
<td>Kumai Consulting</td>
<td>Kumai</td>
<td>Sadao</td>
<td>-</td>
<td>Yoshise</td>
<td>Masanori</td>
</tr>
<tr>
<td>Hitachi High Technologies</td>
<td>Ikota</td>
<td>Masami</td>
<td>Siltronic AG</td>
<td>Passek</td>
<td>Friedrich</td>
</tr>
<tr>
<td>Global Wafers Japan</td>
<td>Takamori</td>
<td>Yasutoshi</td>
<td>AIST</td>
<td>Yamamichi</td>
<td>Masaaki</td>
</tr>
<tr>
<td>Kuroda Precision Industries</td>
<td>Ito</td>
<td>Shinji</td>
<td>Meiji University</td>
<td>Ogura</td>
<td>Atsushi</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SEMI Japan</td>
<td>Collins</td>
<td>Junko</td>
</tr>
</tbody>
</table>

Table 2 Leadership Changes
No Leadership changes
Table 3 Ballot Results

Passed ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review. Failed ballots and line items were returned to the originating task forces for re-work and re-balloting. No ballot review.

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6042</td>
<td>LINE ITEM REVISION OF SEMI MF1763-0706 (Reapproved 1111) TEST METHOD FOR MEASURING CONTRAST OF A LINEAR POLARIZER Line Item 1: Correct title and concomitant text</td>
<td>Failed</td>
</tr>
<tr>
<td>6043</td>
<td>LINE ITEM REVISION OF SEMI MF28-0707 (Reapproved 0912) TEST METHOD FOR MINORITY CARRIER LIFETIME IN BULK GERMANIUM AND SILICON BY MEASUREMENT OF PHOTOCONDUCTIVITY DECAY Line Item 1: Correct title and concomitant text</td>
<td>Passed as is</td>
</tr>
<tr>
<td>6044</td>
<td>LINE ITEM REVISION OF SEMI MF673-1014 TEST METHODS FOR MEASURING RESISTIVITY OF SEMICONDUCTOR WAFERS OR SHEET RESISTANCE OF SEMICONDUCTOR FILMS WITH A NONCONTACT EDDY-CURRENT GAUGE Line Item 1: Correct title and concomitant text</td>
<td>Passed as is</td>
</tr>
<tr>
<td>6045</td>
<td>LINE ITEM REVISION OF SEMI MF928-1014 TEST METHODS FOR EDGE CONTOUR OF CIRCULAR SEMICONDUCTOR WAFERS AND RIGID DISK SUBSTRATES Line Item 1: Correct title and concomitant text</td>
<td>Passed as is</td>
</tr>
<tr>
<td>6046</td>
<td>Line Item Revision to SEMI MF1982-0714 Test Methods For Analyzing Organic Contaminants On Silicon Wafer Surfaces By Thermal Desorption Gas Chromatography Line Item 1: Correct title and concomitant text</td>
<td>Passed as is</td>
</tr>
<tr>
<td>6047</td>
<td>Reapproval of SEMI MF728-1106 (Reapproved 1111) Practice for Preparing an Optical Microscope for Dimensional Measurements Line Item 1: Correct title and concomitant text</td>
<td>Passed as is (Super Clean)</td>
</tr>
<tr>
<td>6048</td>
<td>Reapproval of SEMI MF978-1106 (Reapproved 1111) Test Method for Characterizing Semiconductor Deep Levels by Transient Capacitance Techniques Line Item 1: Correct title and concomitant text</td>
<td>Passed as is (Super Clean)</td>
</tr>
</tbody>
</table>

Table 4 Authorized Ballots

No authorized ballot.

<table>
<thead>
<tr>
<th>Document #</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>5915</td>
<td>Cycle2 or 3</td>
<td>Int'l AWG</td>
<td>Line Item Revision to SEMI M1-0215, Addition to Related Information : Illustration of Flatness and Shape Metrics for Silicon Wafers</td>
</tr>
</tbody>
</table>
Table 5 Authorized Activities

<table>
<thead>
<tr>
<th>Document #</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>SNARF</td>
<td>Int’l AWG</td>
<td>Line Item Revision to SEMI M1, MF-1390 and M 59, to be consistency among these three documents for Bow Metrics and add illustration of Shape Metrics in M1</td>
</tr>
</tbody>
</table>

Note: SNARFs and TFOFs are available for review on the SEMI Web site at: http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

Table 6 New Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiW161215-01</td>
<td>Junko Collins</td>
<td>To check a mechanism how to maintain COT including its frequency and report it at the next TC Chapter meeting.</td>
</tr>
<tr>
<td>SiW161215-02</td>
<td>Tetsuya Nakai, Junko Collins</td>
<td>To submit Doc. 5915 to ballot cycle 2 or 3 2017 To make sure the ballot review date of this ballot to NA responsible staff</td>
</tr>
<tr>
<td>SiW161215-03</td>
<td>Junko Collins</td>
<td>To make sure the meeting minutes of EU TC Chapter meeting during SEMICON EU 2016 and make responsible staff work on it if it is not</td>
</tr>
</tbody>
</table>

Action Items from Previous meetings

none
1 Welcome, Reminders, and Introductions
Naoyuki Kawai, committee co-chair, called the meeting to order at 13:00. Self-introductions were made followed by the agenda review.

2 Required Meeting Elements
The meeting reminders on program membership requirement, antitrust issues, intellectual property issues and international effective meeting guidelines, were reviewed by Junko Collins.

Attachment: Required_Elements_Reg_20150327_E+J_2016StdTemplate

3 Review of Previous Meeting Minutes
The committee reviewed the minutes of the previous meeting held on June 10, 2016.

Motion: To approve the minutes of the previous meeting.
By / 2nd: T. Nakai (SUMCO) / F. Passek (Siltronic AG)
Discussion: None
Vote: 8 in favor and 0 opposed. Motion passed.

4 SEMI Staff Report
Junko Collins gave the SEMI staff report. This report included Global SEMI Events, Global Standards Meetings Schedule, Ballot Critical Dates, Publication Update, A&R Ballot Review and Contact Information.

Of not, the meeting schedule during SEMICON Japan was reviewed and all participants agreed upon the attached schedule.

Attachment: SEMI Staff Report 20161211_v1.1
5 Liaison Reports

5.1 Japan Regional Standards Committee (JRSC)

Some highlights were included in the staff report and no other special report from the last JRSC meeting.

Attachment: None

5.2 Global Coordinating Subcommittee (GCS)

Tetsuya Nakai reported for the Global Coordinating Subcommittee (GCS). Of note;

- GCS members held a meeting and suggested plan to remove terms out of M59, Terminology for Silicon Technology, and place them back to the original standards when they are due for 5 year review, also new idea to maintain terminology within COT.

  ✔ AI: Staff to check the mechanism how to maintain the COT including frequency and report it at the next meeting.

Attachment: None

5.3 North America Silicon Wafer TC Chapter

No report since the North America Silicon Wafer TC Chapter did not have meeting during NA Fall Standards Meetings.

Attachment: none

5.4 Europe Silicon Wafer Committee

Europe Silicon Wafer TC Chapter liaison report was presented by F. Passek.

Please see details in the attachments.

Attachment: Europe Si Wafer Liaison Report Dec 2016 v2

Japan Status Si Wafer Dec 2016

5.5 JSNM Report

Masayoshi Yoshise (SEMI liaison member for M4S (Material Standards Study Group for Semiconductor Supply-Chain)) reported.

- Focusing Standardization for Evaluation Method of Material Characteristics.
- Activity: “Standardization for low carbon concentration in silicon by FT-IR measurement” Improve detection limit from $2 - 5 \times 10^{15}$ atoms/cm$^3$ to $1 \times 10^{14}$ atoms/cm$^3$
- Future plans for
  - “Standardization for low carbon concentration in silicon by PL method for $1 \times 10^{13}$ atoms/cm$^3$ ”
  - “Standardization for epitaxial layer resistivity”.

Attachment: None
6 Ballot Review

6.1 6042: LINE ITEM REVISION OF SEMI MF1763-0706 (Reapproved 1111) TEST METHOD FOR MEASURING CONTRAST OF A LINEAR POLARIZER LI1: Correct title and concomitant text

Motion: Line item(s) 1 failed TC Chapter review and will be returned to the TF for rework.
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 8 in favor and 0 opposed. Motion passed.

Attachment: 6042_Ballot report 20161215

6.2 6043: LINE ITEM REVISION OF SEMI MF28-0707 (Reapproved 0912) TEST METHOD FOR MINORITY CARRIER LIFETIME IN BULK GERMANIUM AND SILICON BY MEASUREMENT OF PHOTOCONDUCTIVITY DECAY LI1: Correct title and concomitant text

Motion: Line item(s) 1 passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.

Attachment: 6043_Ballot report 20161215

6.3 6044: LINE ITEM REVISION OF SEMI MF673-1014 TEST METHODS FOR MEASURING RESISTIVITY OF SEMICONDUCTOR WAFERS OR SHEET RESISTANCE OF SEMICONDUCTOR FILMS WITH A NONCONTACT EDDY-CURRENT GAUGE LI1: Correct title and concomitant text

Motion: Line item(s) 1 passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.

Attachment: 6044_Ballot report 20161215

6.4 6045: LINE ITEM REVISION OF SEMI MF928-1014 TEST METHODS FOR EDGE CONTOUR OF CIRCULAR SEMICONDUCTOR WAFERS AND RIGID DISK SUBSTRATES LI1: Correct title and concomitant text

Motion: Line item(s) 1 passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 8 in favor and 0 opposed. Motion passed.

Attachment: 6045_Ballot report 20161215

6.5 6046: Line Item Revision to SEMI MF1982-0714 Test Methods For Analyzing Organic Contaminants On Silicon Wafer Surfaces By Thermal Desorption Gas Chromatography LI1: Correct title and concomitant text

Motion: Line item(s) 1 passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.
6.6 6047: Reapproval of SEMI MF728-1106 (Reapproved 1111) Practice for Preparing an Optical Microscope for Dimensional Measurements

Motion: This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.

Attachment: 6047_Ballot report 20161215

6.7 6048: Reapproval of SEMI MF978-1106 (Reapproved 1111) Test Method for Characterizing Semiconductor Deep Levels by Transient Capacitance Techniques

Motion: This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural
By / 2nd: R. Takeda (GWJ) / T. Otsuki (SEH)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.

Attachment: 6048_Ballot report 20161215

7 Task Force Reports

7.1 International 450mm Shipping Box Task Force / JA Shipping Box Task Force
No report to this meeting.

Attachment: none
7.2 International Advanced Wafer Geometry Task Force / Japan AWG Task Force

Masanori Yoshise reported for the International Advanced Wafer Geometry Task Force / the Japan AWG Task Force. Please see the attachment for details.

Ballot Submission

Motion: To submit Doc. 5915: Line Item Revision to SEMI M1-0215, Addition to Related Information : Illustration of Flatness and Shape Metrics for Silicon Wafers to Cycle 2 or 3 2017

By / 2nd: T. Nakai (SUMCO) / F. Passek (Siltronic AG)
Discussion: None
Vote: 9 in favor and 0 opposed. Motion passed.

SNARF Approval

Motion: To approve Line Item Revision to SEMI M1-0215, MF-1390 and M 59, to be consistency among these three document for Bow Metrics and add illustration of Shape Metrics in M1

By / 2nd: M. Yoshise (SUMCO) / F. Passek (Siltronic AG)
Discussion: None
Vote: 11 in favor and 0 opposed. Motion passed.

Attachment: AWG Meeting Minute 20161215
AWG_SNARF for Bow M1 MF1390 R1.2

7.3 International Polished Wafer Task Force / International 450mm Wafer Task Force

Y. Takamori reported. See details in attachment.

Attachment: PW_SNARF M1 fiducials figures clean-up
PW_SEMICON Europa 2016 IPWTF – Valley
PW_SEMI standards for TEM grids - Kwakman

7.4 International Epitaxial Wafers Task Force

There was no particular report.

Attachment: None

7.5 International Annealed Wafers Task Force

There was no particular report.

Attachment: None

7.6 International Terminology Task Force

See GCS Report..

Attachment: None

7.7 International SOI Wafers Task Force

There was no meeting and no particular report.

Attachment: None
7.8 *International Test Method Task Force / Japan Test Method Task Force*
Ryuji Takeda reported for the International Test Method Task Force. See the details in the attachment.

**Attachment:**
- TEST_TF Meeting Minutes_int'l Test Method 12142016.pdf
- TEST_Meeting Minuets of Japan Test Method TF on Dec 12th 2016_v0.pdf

7.9 *International Advanced Surface Inspection Task Force*
Masami Ikota reported for the International Advanced Surface Inspection Task Force. Of note,
- The first draft of Doc. 6096 will be circulated among the task force members.

**Attachment:** IAASI TF SemiconJapan2016 Minutes.pdf

7.10 *Fiducial Mark Interoperability Task Force*
No special report.

**Attachment:** None

7.11 *TC Chapter Project*
The following items are reviewed at the meeting.
- 3-year Project Period
  No documents to be expanded the project period.
- Consideration of 5-year review
  Currently no document has to be considered.

**Attachment:**
8 Old Business

8.1 Previous Meeting Action Items

Junko Collins reviewed the previous meeting action items.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>SiW160909-01</td>
<td>Ryuji Takeda, Tetsuya Nakai</td>
<td>Background: GCS members held a meeting and suggested plan to remove terms out of M59, Terminology for Silicon Technology, and place them back to the original standards when they are due for 5 year Review. For effective discussion, Japan Chapter will propose a counter suggestion. Ryuji Takeda to create a counter proposal. Tetsuya Nakai to bring it up at the appropriate meeting during SEMICON Europa in October.</td>
</tr>
</tbody>
</table>

9 New Business

9.1 TEM Grid Standardization

Meeting to introduce of a proposal of a new standard, Specification for Lamella Carriers Used in Transmission Electron Microscopes was held on December 13 at SEMI Japan office. Thermo Fisher Scientific introduced back ground of this standardization including why TEM grid standardization is needed. See meeting agenda, presentation and proposed drafts of SNARF and TFOF at that meeting. All attendees also reviewed the scope of PI&C, 3DS-IC and Silicon Wafer Global Technical Committees for finding suitable place to be addressed on this topic. In the event, all participants agreed that PI&C should be right place. PI&C supported this standard activity. At the Japan PI&C TC Chapter meeting on December 14, the TC chapter decided to support this activity. It was also pointed out that conducting a survey should be useful. SEMI HQ will conduct the survey created by Thermo Fisher.

Attachment: 2016.12.13_TEM Grids

10 Action Item Review

10.1 New Action Items

Junko Collins reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>SiW161215-01</td>
<td>Junko Collins</td>
<td>To check a mechanism how to maintain COT including its frequency and report it at the next TC Chapter meeting.</td>
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<td>SiW161215-02</td>
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<td>To submit Doc. 5915 to ballot cycle 2 or 3 2017 To make sure the ballot review date of this ballot to NA responsible staff</td>
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<td>SiW161215-03</td>
<td>Junko Collins</td>
<td>To make sure the meeting minutes of EU TC Chapter meeting during SEMICON EU 2016 and make responsible staff work on it if it is not</td>
</tr>
</tbody>
</table>
11 Next Meeting and Adjournment

The next meeting of the Japan Chapter of Global Silicon Wafer Technical Committee is scheduled for Friday, March 10, 2017, 14:00-17:00, SEMI Japan, Tokyo Japan

Having no further business, a motion was made to adjourn the Japan Chapter of Global Silicon Wafer Technical Committee meeting on December 15. Adjournment was at 17:00.

Minutes respectfully submitted by:
Junko Collins
Director, Standards & EHS
SEMI Japan
jcollins@semi.org

Minutes approved by:
Naoyuki Kawai (The University of Tokyo), Co-chair
Tetsuya Nakai (SUMCO), Co-chair

#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 Junko Collins at the contact information above.