Japan Silicon Wafer TC Chapter
Meeting Summary and Minutes

Japan Summer Standards Meeting
Thursday, December 17, 2015, 09:00-16:00
Conference Tower, Tokyo Big Sight, Tokyo, Japan

Next TC Chapter Meeting
March 11, 2016, 13:30-17:00,
Meeting Room, SEMI Japan Office, Tokyo, Japan

Table 1 Meeting Attendees

Co-Chairs: Naoyuki Kawai (Self), Tetsuya Nakai (SUMCO)

SEMI Staff: Junko Collins (SEMI Japan)

Company	*Last*	*First*	*Company*	*Last*	*First*
Hitachi High Technologies	Ikota	Masami	GlobalWafers Japan	Takeda	Ryuji
Self	Kawai	Naoyuki	Systems Engineering	Watanabe	Kaori
Siltronic AG	Passek	Friedrich	Shin'etsu-Handotai	Toda	Naohisa
Kumai Consulting	Kumai	Sadao	-	Yoshise	Masanori
Global Wafers Japan	Takamori	Yasutoshi	Shin'Etsu Handotai	Ohtsuki	Tsuyoshi
Tokyo Electron	Mashiro	Supika	Supersight	Perroots	Len
SUMCO	Nakai	Tetsuya	Acteon	Komatsu	Shoji
Shin'Etsu Polymer	Hiroyuki	Shida	SEMI Japan	Collins	Junko

Table 2 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.

Document #	*Document Title*	*Committee Action*
5770	NEW STANDARD: GUIDE FOR MEASURING BULK MICRO DEFECT DENSITY AND DENUDED ZONE WIDTH IN ANNEALED SILICON WAFERS	**Failed**
5855A	LINE ITEM REVISION OF SEMI MF1771-1110 TEST METHOD FOR EVALUATING GATE OXIDE INTEGRITY BY VOLTAGE RAMP TECHNIQUE LI1: Correct the source and its designations for the referenced standards in section 4.2	**Passed as balloted (super clean)**
5893	Revision of SEMI M1-0915 SPECIFICATIONS FOR POLISHED SINGLE CRYSTAL SILICON WAFERS	**Passed as balloted**
5910	LINE ITEM REVISION OF SEMI M57-0515, SPECIFICATION~~S~~ FOR SILICON ANNEALED WAFERS IL1: Correct the title of this standard from “Specifications” to “Specification”	**Passed as balloted (super clean)**
5929	LINE ITEM REVISION OF SEMI MF42-1105 (Reapproved 0611) TEST METHOD~~S~~ FOR CONDUCTIVITY TYPE OF EXTRINSIC SEMICONDUCTING MATERIALS IL1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted**
5930	LINE ITEM REVISION OF SEMI MF43-0705 (Reapproved 0611) TEST METHOD~~S~~ FOR RESISTIVITY OF SEMICONDUCTOR MATERIALS IL1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted**
5931	REAPPROVAL OF SEMI MF81-1105 (Reapproved 0611) TEST METHOD FOR MEASURING RADIAL RESISTIVITY VARIATION ON SILICON WAFERS	**Passed as balloted (super clean)**
5932	REAPPROVAL OF SEMI MF154-1105 (Reapproved 0611) GUIDE FOR IDENTIFICATION OF STRUCTURES AND CONTAMINANTS SEEN ON SPECULAR SILICON SURFACES	**Passed as balloted (super clean)**
5933	LINE ITEM REVISION OF SEMI MF674-0705 (Reapproved 0611) PRACTICE~~S~~ FOR PREPARING SILICON FOR SPREADING RESISTANCE MEASUREMENTS LI1: Correct the title of this standard from “Practices” to “Practice”	**Passed as balloted**
5934	LINE ITEM REVISION OF SEMI MF847-0705 (Reapproved 0611) TEST METHOD~~S~~ FOR MEASURING CRYSTALLOGRAPHIC ORIENTATION OF FLATS ON SINGLE CRYSTAL SILICON WAFERS BY X-RAY TECHNIQUES LI1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted**
5935	REAPPROVAL OF SEMI MF951-0305 (Reapproved 0211) TEST METHOD FOR DETERMINATION OF RADIAL INTERSTITIAL OXYGEN VARIATION IN SILICON WAFERS	**Passed as balloted (supper clean)**
5936	LINE ITEM REVISION OF SEMI MF1152-0305 (Reapproved 0211) TEST METHOD~~S~~ FOR DIMENSIONS OF NOTCHES ON SILICON WAFERS LI1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted (supper clean)**
5937	REAPPROVAL OF SEMI MF1239-0305 (Reapproved 0211) TEST METHOD FOR OXYGEN PRECIPITATION CHARACTERISTICS OF SILICON WAFERS BY MEASUREMENT OF INTERSTITIAL OXYGEN REDUCTION	**Passed as balloted (supper clean)**
5938	REAPPROVAL OF SEMI MF2139-1103 (Reapproved 1110) TEST METHOD FOR MEASURING NITROGEN CONCENTRATION IN SILICON SUBSTRATES BY SECONDARY ION MASS SPECTROMETRY	**Passed as balloted (supper clean)**
5939	REAPPROVAL OF SEMI MF1617-0304 (Reapproved 0710) TEST METHOD FOR MEASURING SURFACE SODIUM, ALUMINUM, POTASSIUM, AND IRON ON SILICON AND EPI SUBSTRATES BY SECONDARY ION MASS SPECTROMETRY	**Passed as balloted (supper clean)**
5940	REAPPROVAL OF SEMI MF533-0310 TEST METHODS FOR THICKNESS AND THICKNESS VARIATION OF SILICON WAFERS	**Passed as balloted (supper clean)**

Table 4 Authorized Ballots

Document #	When	SC/TF/WG	Details
TBD	Cycle 1, 2016	JA Shipping Box TF	Reapproval of M45-1110
5744A	Earliest as possible	International AWG TF	5744A: Line Item Revision to M49-1014, GUIDE FOR SPECIFYING GEOMETRY MEASUREMENT SYSTEMS FOR SILICON WAFERS FOR THE 130 nm TO 16 nm TECHNOLOGY GENERATIONS Review at the NA Silicon Wafer TC Chapter meeting in conjunction with SEMICON West 2016

Table 5 Authorized Activities

Document #	Type	SC/TF/WG	Details
5069	SNARF	International 450 mm Shipping Box TF	Withdrawn, New Standard: Specification for 450 mm Wafer Shipping System Joint GCS approval needed for official approval
TBD	SNARF	JA Shipping Box TF	Reapproval of M45-1110
TBD	SNARF	International Epitaxial Wafer TF	Revision of SEMI M62-0515, Specifications for Silicon Epitaxial Wafers Need Global TC members review for official approval
TBD	SNARF	International Test Method TF	NEW STANDARD "Test method for nitrogen content in silicon by charged particle activation analysis" Need Global TC members review for official approval
TBD	SNARF	Int'l Advanced Automated Surface Inspection TF	Revision of SEMI MF1811-xxxx GUIDE FOR ESTIMATING THE POWER SPECTRAL DENSITY FUNCTION AND RELATED FINISH PARAMETERS FROM SURFACE PROFILE DATA Need Global TC members review for official approval

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

Item #	*Assigned to*	*Details*	
SiW151217-01	TF	To submit draft of Ballot document of M45 to Cycle 1	
SiW151217-02	Staff	To send the request for approval to withdraw the SNARF 5069 for New Standards: Specification for 450mm Wafer Shipping System	
SiW151217-03	Staff	To request Global TC members of 2 weeks review on revised SNARF 5911 “Line Item Revision of SEMI M62-0515, Specifications for Silicon Epitaxial Wafers” to major revision, “Revision of SEMI M62-0515, Specifications for Silicon Epitaxial Wafers”.	
SiW151217-04	Staff	To request Global TC members of 2 weeks review on the SNARF for NEW STANDARD: Test method for nitrogen content in silicon by charged particle activation analysis	
SiW151217-05	Staff	To request Global TC members of 2 weeks review on the SNARF for Revision of SEMI MF1811-xx1y GUIDE FOR ESTIMATING THE POWER SPECTRAL DENSITY FUNCTION AND RELATED FINISH PARAMETERS FROM SURFACE PROFILE DATA	
SiW151217-06	TF	To submit the ballot of Doc. 5744A Revision of M49 which will be reviewed during SEMICON West 2016 (Cycle 2 or 3)	
Action Items from Previous meetings			
SiW150306-01	Junko Collins	1 To forward the modified charter in Agenda 5.1 to GCS for getting approval (including ISC approval) 2 To change the charter on the website.	1 done 2 open
SiW141203-04	International 450mm Wafer Task Force	To submit *Doc. #5794, New Standard: Specification for Developmental 450 mm Diameter Polished Single Crystal Notchless Silicon Wafers with Back Surface Fiducial Marks* for Cycle 3 or 4.	open (NA)

1 Welcome, Reminders, and Introductions

Naoyuki Kawai, committee co-chair, called the meeting to order at 09:00. 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 Naoyuki Kawai.

Attachment: 2.0_Required_Elements_Reg_20140926_E+J

3 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting held on March 6, 2015.

Motion: To approve the minutes of the previous meeting with editorial changes.
By / 2nd: Tetsuya Nakai (SUMCO) / Friedrich Passek (Siltronic)
Discussion: None
Vote: 10 in favor and 0 opposed. **Motion passed.**

Attachment: Minutes_150918_SiW_R1.0

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 and SEMI Japan Standards Award recipients. Of note, Mitsuhiro Matsuda (Hitachi Kokudai Electric) has stepped down from JRSC co-chair due to termination of a term. New co-chair will be Kenji Yamagata (Daifuku).

Attachment: 04-00_SEMI Staff Report 20151215_r2

5 Liaison Reports

5.1 *Japan Regional Standards Committee (JRSC)*

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

Action Items: None

5.2 *Global Coordinating Subcommittee (GCS)*

Tetsuya Nakai reported for the Global Coordinating Subcommittee (GCS). See attached file.

Action Items: Si Wafer TC Chapter_151215

5.3 *North America Silicon Wafer TC Chapter*

North America Silicon Wafer TC Chapter did not have any meeting since SEMICON West 2016 and no special report for this time.

Attachment: None

5.4 *Europe Silicon Wafer Committee*

Friedrich Passek reported for the Europe Silicon Wafer TC Chapter. Please see the details in the attachment.

Attachment: EU Silicon Wafer Liaison Updated 20151022 v1

5.5 *JEITA Report*

Naoyuki Kawai reported JEITA activities. There is no special report to this meeting for this time.

Attachment: None

6 Ballot Review

Document #	*Document Title*	*Committee Action*
5770	NEW STANDARD: GUIDE FOR MEASURING BULK MICRO DEFECT DENSITY AND DENUDED ZONE WIDTH IN ANNEALED SILICON WAFERS	**Failed** 5770_Ballot Report (2015.12.17)
5855A	LINE ITEM REVISION OF SEMI MF1771-1110 TEST METHOD FOR EVALUATING GATE OXIDE INTEGRITY BY VOLTAGE RAMP TECHNIQUE LI1: Correct the source and its designations for the referenced standards in section 4.2	**Passed as balloted (super clean)** 5855A_Ballot Report (2015.12.17)
5893	Revision of SEMI M1-0915 SPECIFICATIONS FOR POLISHED SINGLE CRYSTAL SILICON WAFERS	**Passed as balloted** 5893_Ballot report (2015.12.17)
5910	LINE ITEM REVISION OF SEMI M57-0515, SPECIFICATION~~S~~ FOR SILICON ANNEALED WAFERS IL1: Correct the title of this standard from “Specifications” to “Specification”	**Passed as balloted (super clean)** 5910_Ballot report (2015.12.17)
5929	LINE ITEM REVISION OF SEMI MF42-1105 (Reapproved 0611) TEST METHOD~~S~~ FOR CONDUCTIVITY TYPE OF EXTRINSIC SEMICONDUCTING MATERIALS IL1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted** 5929_Ballot report (2015.12.17)
5930	LINE ITEM REVISION OF SEMI MF43-0705 (Reapproved 0611) TEST METHOD~~S~~ FOR RESISTIVITY OF SEMICONDUCTOR MATERIALS IL1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted** 5930_Ballot report (2015.12.17)
5931	REAPPROVAL OF SEMI MF81-1105 (Reapproved 0611) TEST METHOD FOR MEASURING RADIAL RESISTIVITY VARIATION ON SILICON WAFERS	**Passed as balloted (super clean)** 5931_Ballot report (2015.12.17)
5932	REAPPROVAL OF SEMI MF154-1105 (Reapproved 0611) GUIDE FOR IDENTIFICATION OF STRUCTURES AND CONTAMINANTS SEEN ON SPECULAR SILICON SURFACES	**Passed as balloted (super clean)** 5932_Ballot report (2015.12.17)
5933	LINE ITEM REVISION OF SEMI MF674-0705 (Reapproved 0611) PRACTICE~~S~~ FOR PREPARING SILICON FOR SPREADING RESISTANCE MEASUREMENTS LI1: Correct the title of this standard from “Practices” to “Practice”	**Passed as balloted** 5933_Ballot report (2015.12.17)
5934	LINE ITEM REVISION OF SEMI MF847-0705 (Reapproved 0611) TEST METHOD~~S~~ FOR MEASURING CRYSTALLOGRAPHIC ORIENTATION OF FLATS ON SINGLE CRYSTAL SILICON WAFERS BY X-RAY TECHNIQUES LI1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted** 5934_Ballot report (2015.12.17)
5935	REAPPROVAL OF SEMI MF951-0305 (Reapproved 0211) TEST METHOD FOR DETERMINATION OF RADIAL INTERSTITIAL OXYGEN VARIATION IN SILICON WAFERS	**Passed as balloted (supper clean)** 5935_Ballot report (2015.12.17)
5936	LINE ITEM REVISION OF SEMI MF1152-0305 (Reapproved 0211) TEST METHOD~~S~~ FOR DIMENSIONS OF NOTCHES ON SILICON WAFERS LI1: Correct the title of this standard from “Test Methods” to “Test Method”	**Passed as balloted (supper clean)** 5936_Ballot report (2015.12.17)
5937	REAPPROVAL OF SEMI MF1239-0305 (Reapproved 0211) TEST METHOD FOR OXYGEN PRECIPITATION CHARACTERISTICS OF SILICON WAFERS BY MEASUREMENT OF INTERSTITIAL OXYGEN REDUCTION	**Passed as balloted (supper clean)** 5937_Ballot report

Document #	Document Title	Committee Action
		(2015.12.17)
5938	REAPPROVAL OF SEMI MF2139-1103 (Reapproved 1110) TEST METHOD FOR MEASURING NITROGEN CONCENTRATION IN SILICON SUBSTRATES BY SECONDARY ION MASS SPECTROMETRY	**Passed as balloted (supper clean)** 5938_Ballot report (2015.12.17)
5939	REAPPROVAL OF SEMI MF1617-0304 (Reapproved 0710) TEST METHOD FOR MEASURING SURFACE SODIUM, ALUMINUM, POTASSIUM, AND IRON ON SILICON AND EPI SUBSTRATES BY SECONDARY ION MASS SPECTROMETRY	**Passed as balloted (supper clean)** 5939_Ballot report (2015.12.17)
5940	REAPPROVAL OF SEMI MF533-0310 TEST METHODS FOR THICKNESS AND THICKNESS VARIATION OF SILICON WAFERS	**Passed as balloted (supper clean)** 5940_Ballot report (2015.12.17)

Attachment: See the attached files described in the column of Committee Action.

7 Subcommittee & Task Force Reports

7.1 *International 450mm Shipping Box Task Force / JA Shipping Box Task Force*

Shoji Komatsu reported for the International 450mm Shipping Box Task Force / JA Shipping Box Task Force. Of note:

- See the attachment with respect to other activities. Of note;

  International Shipping Box Task force decided to propose the JA silicon wafer TC chapter & GCS withdrawal of the SNARF.5069 (450mm Wafer Shipping System).

Motion: To withdraw the SNARF 5069: New Standard: Specification for 450 mm Wafer Shipping System

By / 2nd: Shoji Komatsu (Acteon) / Sadao Kumai (Kumai Conculting)

Discussion: Need Joint GCS approval after this meeting.

Vote: 12 in favor and 0 opposed. **Motion passed.**

JA-Shipping Box Task Force decided to propose the JA silicon wafer TC chapter submission of reapproval ballot of M45-1110(300mm Wafer Shipping System) due to five year review.

Motion: To approve the SNARF for reapproval of M45-1110(300mm Wafer Shipping System) and submit the ballot to cycle 1, 2016.

By / 2nd: Shoji Komatsu (Acteon) / Sadao Kumai (Kumai Consulting)

Discussion:

Vote: 12 in favor and 0 opposed. **Motion passed.**

Attachment: 450mm SB-TF_Report_151217

JA Shipping Box TF Minutes - 2015_12_16

SNARF_M45 R0.1

7.2 *International Epitaxial Wafers Task Force*

The task force decided to revise the SNARF 5911. Originally it was a line item revision but the task force thinks that this revision activity should be major revision activity.

Motion: To revise SNARF 5911 "Line Item Revision of SEMI M62-0515, Specifications for Silicon Epitaxial Wafers" to major revision, "Revision of SEMI M62-0515, Specifications for Silicon Epitaxial Wafers".

By / 2nd: Naohisa Toda (Shin'Etsu Handotai) / Tsuyoshi Ohtsuki (Shin'Etsu Handotai)

Discussion: Need two weeks TC members review

Vote: 10 in favor and 0 opposed. **Motion passed.**

Attachment: EPI SNARF 20151215

IEP_TF Meeting Minutes_20151215

7.3 *International Annealed Wafers Task Force*

Doc. 5910: Line Item Revision of SEMI M57-0515, Specifications for Silicon Annealed Wafers passed the TC Chapter review. See details in the ballot review section.

Attachment: None

7.4 *International Terminology Task Force*

There was no meeting and no particular report.

Attachment: None

7.5 *International SOI Wafers Task Force*

There was no meeting and no particular report.

Attachment: None

7.6 *International Test Method Task Force / Japan Test Method Task Force*

Ryuji Takeda reported for the International Test Method Task Force.

- Ballot Review
  - See Ballot Review section.

- SNARF
  - NEW STANDARD: Test method for nitrogen content in silicon by charged particle activation analysis

Motion: To approve the SNARF for NEW STANDARD: Test method for nitrogen content in silicon by charged particle activation analysis

By / 2nd: Ryuji. Takeda (Global Wafers) / Tsuyoshi Ohtsuki (Shin'Etsu Handotai)

Discussion: Need two weeks TC members review

Vote: 8 in favor and 0 opposed. **Motion passed.**

- Ballot
  - Doc. 5737: Revision of SEMI MF1391-1107 (Reapproved 0912), Test Method for Substitutional Atomic Carbon Content of Silicon by Infrared Absorption.
  - This will be submitted to the cycle for review at the NA Silicon Wafer TC Chapter meeting in conjunction with SEMICON West 2016. (Need to get GCS approval)

Attachment: Int'l Test Method TF Ballot review 2015 Dec

Meeting minute of Int'l Test Method TF on Dec 15th 2015_v1

7.7 *International Advanced Surface Inspection Task Force*

Masami Ikota reported for the International Advanced Surface Inspection Task Force.

- SNARF
  - Revision of SEMI MF1811-xx1y GUIDE FOR ESTIMATING THE POWER SPECTRAL DENSITY FUNCTION AND RELATED FINISH PARAMETERS FROM SURFACE PROFILE DATA

Motion: To approve the SNARF for Revision of SEMI MF1811-xx1y GUIDE FOR ESTIMATING THE POWER SPECTRAL DENSITY FUNCTION AND RELATED FINISH PARAMETERS FROM SURFACE PROFILE DATA

By / 2nd: Masami Ikota (Hitachi High Technologies) / Tsuyoshi Ohtsuki (Shin'Etsu Handotai)

Discussion: Need two weeks TC members review

Vote: 9 in favor and 0 opposed. **Motion passed.**

- See more details in the attachment.

Attachment: Japan_IAASI_TF_Dec_2015_Meeting minutes

SNARF for Rev of SEMI M1811XXXX

7.8 *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 approve ballot submission of Doc. 5744A Revision of M49 which will be reviewed during SEMICON West 2016

By / 2nd: Masanori. Yoshise (Self) /Len Perroots (Supersight)

Discussion:

Vote: 9 in favor and 0 opposed. **Motion passed.**

Attachment: AWG TF report 20151217

7.9 *International Polished Wafer Task Force / International 450mm Wafer Task Force*

Naoyuki Kawai reported for the *International Polished Wafer Task Force / International 450mm Wafer Task Force*.

There is no special report for this time.

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Attachment: None

7.10 *Fiducial Mark Interoperability Task Force*

Tetsuya Nakai reported for the Fiducial Mark Interoperability Task Force. See the details in the attachment.

Attachment: 20150911FMI-TF-Report_r1

7.11 TC Chapter Project

The following items are reviewed at the meeting.

- 3-year Project Period
- Consideration of 5-year review
- Procedures for Correcting Nonconforming Titles of Published Standards Documents

8 Old Business

8.1 *Previous Meeting Action Items*

Junko Collins reviewed the previous meeting action items.

Item #	*Assigned to*	*Details*	
SiW150306-01	Junko Collins	1 To forward the modified charter in Agenda 5.1 to GCS for getting approval (including ISC approval) 2 To change the charter on the website.	1 done 2 open
SiW141203-04	International 450mm Wafer Task Force	To submit *Doc. #5794, New Standard: Specification for Developmental 450 mm Diameter Polished Single Crystal Notchless Silicon Wafers with Back Surface Fiducial Marks* for Cycle 3 or 4.	open (NA)

9 New Business

None

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.

11 Next Meeting and Adjournment

The next meeting of the Japan Chapter of Global Silicon Wafer Technical Committee is scheduled for March 11, 2016, 13:30-17:00, 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 17 in conjunction with the Japan Standards Summer Meetings. Adjournment was at 16:00.

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.