Microlithography NA TC Chapter

Meeting Summary and Minutes

SEMICON West

Wednesday, July 11, 2018

9:00 AM – 11:00 AM

San Francisco Marriott Marquis, San Francisco, California

TC Chapter Announcements

Next TC Chapter Meeting

July 10, 2019 - 10:00 AM – Noon (tentative)

San Francisco, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Bryan Barnes

SEMI Staff: Kevin Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
NIST	Barnes	Bryan	Samoo	Jinhyo	Kim
Pall Corporartion	Bavarian	Mona	DNP	Naoya	Hayashi
Wes Erck & Associates	Erck	Wes	I&I Consulting	Starikov	Alex
Pall Corporation	Hung	Kelvin	IMSM	Tang	Pat
Xyalis	Hurat	Sylvie			

Table 2 Leadership Changes

WG/TF/SC/TC Name	*Previous Leader*	*New Leader*

Table 3 Committee Structure Changes

Previous WG/TF/SC Name	*New WG/TF/SC Name or Status Change*

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
6327	Revision to SEMI P45-0211, Specification For Job Deck Data Format For Mask Tools	Passed with technical changes. Ratification Ballot will be issued.

#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

#	*Type*	*SC/TF/WG*	*Details*
6327	SNARF	Mask Order TF	Revision to SEMI P45-0211, Specification For Job Deck Data Format For Mask Tools

Table 6 Authorized Activities

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

#	*Type*	*SC/TF/WG*	*Details*
TBD	SNARF	Mask Order TF	Revision to SEMI P45-0211, Specification For Job Deck Data Format For Mask Tools (expand scope)

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

Table 7 Authorized Ballots

#	*When*	*TF*	*Details*
None			

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

#	*TF*	*Title*	*Expiration Date*
None			

Table 9 SNARF(s) Abolished

#	*TF*	*Title*
None		

Table 10 Standard(s) to receive Inactive Status

Standard Designation	*Title*
SEMI P9-1111	Guide for Functional Testing of Microelectronic Resists
SEMI P29-1111	Specification for Characteristics Specific to Attenuated Phase Shift Masks and Masks Blanks
SEMI P31-0304 (Reapproved 0611)	Practice for Catalog Publication for Chemical Amplified (CA) Photoresist Parameter
SEMI P36-1108 (Reapproved 0913)	Guide for Magnification Reference for Critical Dimension Measurement Scanning Electron Microscopes (CD-SEM)
SEMI P37-0613	Specification for Extreme Ultraviolet Lithography Substrates and Blanks
SEMI P46-1111	Specification for Critical Dimension (CD) Measurement Information Data on Photomask by XML
SEMI P47-0307 (Reapproved 0513)	Test Method for Evaluation of Line-Edge Roughness and Linewidth Roughness

Table 11 New Action Items

Item #	*Assigned to*	*Details*
July2018-#1	Kevin Nguyen (SEMI) & Alex Starikov	To coordinate and distribute Revision of SEMI P19-92 (Reapproved 0707) Specification for Metrology Pattern Cells for Integrated Circuit Manufacture, for information ballot

Table 12 Previous Meeting Action Items

Item #	*Assigned to*	*Details*	*Status*
July2017-#1	Kevin Nguyen (SEMI)	To distribute SNARF for Revision to SEMI P18-92 (Reapproved 1104) SPECIFICATION FOR OVERLAY CAPABILITIES OF WAFER STEPPERS, to members for two weeks review	Completed
July2017-#2	Bryan Barnes (NIST)	To review SEMI P47-0307 (Reapproved 0513) Test Method for Evaluation of Line-Edge Roughness and Linewidth Roughness	Completed
July2017-#3	Kevin Nguyen (SEMI)	To contact the author of SEMI P37-0613 Specification for Extreme Ultraviolet Lithography Substrates and Blanks, for 5 year review	Completed
July2017-#4	Kevin Nguyen (SEMI)	To seek feedback from members if there is an interest to maintain the following standards. Otherwise, they will go inactive. • SEMI P29-1111 Specification for Characteristics Specific to Attenuated Phase Shift Masks and Masks Blanks • SEMI P46-1111 Specification for Critical Dimension (CD) Measurement Information Data on Photomask by XML • SEMI P31-0304 (Reapproved 0611) Practice for Catalog Publication for Chemical Amplified (CA) Photoresist Parameter • SEMI P45-0211 Specification for Job Deck Data Format for Mask Tools	Completed
July2017-#5	Kevin Nguyen (SEMI)	To contact author from Japan for SEMI P22-0307, Guideline for Photomask Defect Classification and Size Definition, for 5 year review.	Completed

1 Welcome, Reminders, and Introductions

1.1 Bryan Barnes called the meeting to order at 9:00 AM. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

2 Review of Previous Meeting Minutes

2.1 The TC Chapter reviewed the minutes of the previous meeting. There was a minor correction. Wes Erck has stepped down from the TC Chapter leadership, but he still remains active in the task forces.

Motion: Accept the minutes as amended.

By / 2nd: Alex Starikov/Wes Erck

Discussion: None

Vote: Unanimous.

3 Liaison Reports

3.1 *SEMI Staff Report*

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

- Next meetings
    - November 5-8, 2018
    - SEMI HQ in Milpitas, California
- 2018 Critical Dates for SEMI Standards Ballots
    - Cycle 6, 2018
        - Ballot Submission Date: July 20
        - Voting Period Starts: August 1
        - Voting Period Ends: August 31
    - Cycle 7, 2018
        - Ballot Submission Date: August 22
        - Voting Period Starts: September 5

        - Voting Period Ends: October 5
- SEMI Standards Publications
    - Total SEMI Standards in portfolio: 987
        - Includes 236 Inactive Standards
- New Forms, Regulations & Procedure Manual
    - New version of Regulations (June 8, 2018)
        - Improvements on Rules for Handling of Patented Technology (*Regulations* § § 16.1-16.3)
            - Patented Technology that might be material to the Standard is disclosed at the end stage of document development
                - Disclosed after the ballot is issued
                - Assessment for potential materiality and technical justifiability for inclusion shall be postponed to the next scheduled meeting.
        - A TF sometimes decides to use patented technology after it has started the document development project.
            - To require subsequent update of SNARF regarding use of Patented Technology and subsequent LOI process to ensure that TC Chapter agrees to the course of action recommended by the TF.
        - Additional Official Virtual TC Chapter Meeting Related Rules (Regulations ¶ 7.4.2 and § 9.5)
            - Loss of necessary infrastructure at the meeting location described in the Background Statement of the Letter Ballot
                - The necessary infrastructure (e.g., electrical power, internet connection, required software applications)
    - New version of Procedure Manual (June 8, 2018)
    - New TFOF & SNARF
    - New Ballot Review Templates
    - www.semi.org/standards
        - Bottom left, under Resources!

Attachment: 01, Staff Report July 2018_SA rev1

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.

4.1.1 Doc. 6327, Revision to SEMI P45-0211, Specification for Job Deck Data Format For Mask Tools

- Ballot passed with technical changes. Ratification Ballot will be issued. See attachment for details.

Attachment: 02, 6327 Procedural Review

5 Subcommittee and Task Force Reports

5.1 Data Path Task Force

No report.

5.2 Patterning Metrology Task Force

5.2.1 There are two issues with P18 and P19 that were raised by Alex.

- SEMI P18-92 (Reapproved 1104) Specification for Overlay Capabilities of Wafer Steppers
- SEMI P19-92 (Reapproved 0707) Specification for Metrology Pattern Cells for Integrated Circuit Manufacture

Bryan reported that there is an error (raised by Alex at SEMICON West 2017 meeting) on the equation under section 3.1.1 of P18, which appears to be a SEMI publication error. It is currently being fixed by SEMI. P19, on the other hand, needs a new definition of centerline, which needs balloting.

Alex explained the issues with P19 and P18 as he wants other to join with him in the revision process. Bryan recommended Alex to start putting together the informational ballot for distribution to global microlithography committee for feedback. And SEMI Staff will help facilitating the process. By distributing the ballot this way, it probably a good way to strawpoll the interest level. Once the feedback is received, Alex certainly can ask Bryan to proceed for technical ballot.

5.3 Mask Order Task Force

Wes reported that he is working with tool and mask companies to expand P45. A SNARF was presented. And he would like the committee to authorize this activity.

Motion:	To approve SNARF
By / 2nd:	Wes Erck/Alex Starikov
Discussion:	None
Vote:	3-0

Attachment: 03, PV45 Revision SNARF

6 Leadership and Task Force Changes

6.1 Bryan reported NIST is supportive of Standards. However, there is budget constrain. In addition, he has a new manager, so he is unsure of his commitment in the future. However, he is also interest in SEMI Virtual Meeting, and would love to participate when SEMI is ready.

7 Old Business

7.1 *Standards due for Five-Year Review.*

7.1.1 The following standards are due for 5 year review. As there is no volunteer coming forward to keep these standards up to date, it was recommended in letting these standards to go inactive.

- SEMI P9-1111
  - Guide for Functional Testing of Microelectronic Resists
- SEMI P29-1111
  - Specification for Characteristics Specific to Attenuated Phase Shift Masks and Masks Blanks
- SEMI P31-0304 (Reapproved 0611)
  - Practice for Catalog Publication for Chemical Amplified (CA) Photoresist Parameter
- SEMI P35-1106 (Reapproved 0913)
  - Terminology for Microlithography Metrology
- SEMI P36-1108 (Reapproved 0913)
  - Guide for Magnification Reference for Critical Dimension Measurement Scanning Electron Microscopes (CD-SEM)
- SEMI P37-0613
  - Specification for Extreme Ultraviolet Lithography Substrates and Blanks

- SEMI P46-1111
    - Specification for Critical Dimension (CD) Measurement Information Data on Photomask by XML
- SEMI P47-0307 (Reapproved 0513)
    - Test Method for Evaluation of Line-Edge Roughness and Linewidth Roughness

Motion: To let standards above go inactive
By / 2nd: Wes Erck/ Hayashi Naoya
Discussion: None
Vote: 5-0

8 New Business

8.1 *New TFOF and SNARF*

There is a need to create a new task force to maintain and revise lithography standards.

9 Next Meeting and Adjournment

The next meeting is tentatively scheduled for July 10, 2019 - 10:00 AM – Noon.

San Francisco, California. See http://www.semi.org/standards-events for the current list of events.

Having no further business, a motion was made to adjourn. Adjournment was at 11:00 AM.

Respectfully submitted by:

Kevin Nguyen,
SEMI Standards Operations Manager
Phone: 408-943-7997
Email: knguyen@semi.org

Minutes tentatively approved by:

Bryan Barnes (NIST) Co-chair	August 10, 2018

Table 13 Index of Available Attachments[#1]

Title	*Title*
Staff Report July 2018_SA rev1	PV45 Revision SNARF
6327 Procedural Review	

#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.