

North America MEMS/NEMS Committee Meeting Summary and Minutes

N.A. Standards Spring 2013 Meetings
Monday, April 1, 2013, 2:30 – 4:30 PST
SEMI Headquarters in San Jose, CA

Next Committee Meeting

The next N.A. MEMS/NEMS standards meetings will be held on July 08, 2013 at the San Francisco Marriott Marquis Hotel in San Francisco, CA in conjunction with SEMICON West 2013.

For meeting details, registration, the latest schedule, and travel information, please visit
<http://www.semi.org/node/45276>

Table 1 Meeting Attendees

Co-Chairs: Mark Crockett (MEMSMART) / Win Baylies (BayTech Group) / Janet Cassard (NIST)

SEMI Staff: Michael Tran

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
BayTech Group	Baylies	Win	SEMATECH	Allen	Richard
Bevan Wu & Associates	Wu	Bevan	Sonoscan	Martell	Steve
MEMSMART	Crockett	Mark			
<i>NIST</i>	<i>Cassard</i>	<i>Janet</i>			
<i>NIST</i>	<i>Gorman</i>	<i>Jason</i>	SEMI N.A.	Tran	Michael

**Italics indicate virtual participants*

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
Reliability TF	Ravi Doraiswami (University of Maryland)	

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.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5514	Line Items Revisions to SEMI MS5-1211, Test Method for Wafer Bond Strength Measurements Using Micro-Chevron Test Structures	
Line Item 1	Revision to Referenced Standards and Documents	Line Item 1 passed as balloted. Superclean
Line Item 2	Revisions to Terminology	Line Item 2 passed as balloted. Superclean
5267	New Standard: Specification for Microfluidic Port and Pitch Dimensions	Failed committee review.
5515	Revision to SEMI MS7-0708, Specification for Microfluidic Interfaces to Electronic Device Packages	Failed committee review.

Table 4 Authorized Activities

Listing of all new TFOFs, SNARFs, and other activities approved by the committee.

#	Type	SC/TF/WG	Details
---	SNARF	Materials Characterization TF	Line Item Revision to SEMI MS2-0212, Test Method for Step Height Measurements of Thin Films <i>Note: SNARF will be submitted after the committee meeting to the MEMS/NEMS GCS for approval</i>
---	SNARF	Materials Characterization TF	Line Items Revisions to SEMI MS4-0212, Standard Test Method for Young's Modulus Measurements of Thin, Reflecting Films Based on the Frequency of Beams in Resonance <i>Note: SNARF will be submitted after the committee meeting to the MEMS/NEMS GCS for approval</i>

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

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

Table 5 Authorized Ballots

Listing of documents approved by the committee for letter ballot.

#	When	SC/TF/WG	Details
---	Cycle 3 or 4-2013	Materials Characterization TF	Line Item Revision to SEMI MS2-0212, Test Method for Step Height Measurements of Thin Films <i>Note: Ballot authorization of this document will be submitted after the committee meeting to the MEMS/NEMS GCS for approval</i>
---	Cycle 3 or 4-2013	Materials Characterization TF	Line Items Revisions to SEMI MS4-0212, Standard Test Method for Young's Modulus Measurements of Thin, Reflecting Films Based on the Frequency of Beams in Resonance <i>Note: Ballot authorization of this document will be submitted after the committee meeting to the MEMS/NEMS GCS for approval</i>

Table 6 New Action Items

Item #	Assigned to	Details
2013Apr#01	Jason Gorman	To draft a dynamic characterization interest survey and send it to the committee chairs for review and launch it before SEMICON West 2013.

Table 7 Old Action Items

Item #	Assigned to	Details	Status
2012Oct#01	Steve Martell	Reach out to the Assembly & Packaging committee for possible TF leader candidates and related MEMS packaging activities	Open
2012Oct#02	Mark Crockett	Create a LinkedIn discussion topic for reliability and search for a leader for the Reliability TF	Open, Mark will think of a topic for discussion and try again.
2012Oct#03	Mark Crockett	Submit a SNARF to prepare for the 5 year review of SEMI MS6-0308, Guide for Design and Materials for Interfacing Microfluidic Systems	Open; Mark has been too busy.

1 Welcome, Reminders, and Introductions

1.1 Mark Crockett (MEMSMART) called the meeting to order at 2:36 PM PST. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: 01, SEMI Standards Required Meeting Elements

2 Review of Previous Meeting Minutes

2.1 The committee reviewed the minutes of the previous meeting from Fall 2012.

Motion: To approve the previous meeting minutes.

By / 2nd: Steve Martell (Sonoscan) / Win Baylies (BayTech Group)

Discussion: None.

Vote: 4-0 in favor. Motion passed.

Attachment: 02, MEMS/NEMS Meeting Minutes (Fall 2012)

3 Liaison Reports

3.1 SEMI Staff Report

3.1.1 Michael Tran (SEMI N.A.) gave the SEMI N.A. Staff Report. The key items were as follows:

- Some Upcoming SEMI Major Events
 - SEMICON West 2013
 - July 9-11, 2013 in San Francisco, CA, USA
 - SEMICON Taiwan 2013
 - September 4-6, 2013 in Taipei
 - SEMICON Europa 2013
 - October 8-10, 2013 in Dresden, Germany
- Upcoming North America Standards Meetings
 - NA Compound Semiconductor Materials Committee in conjunction with CS MANTECH 2013
 - May 15, 2013 in New Orleans, Louisiana
 - NA Standards Meetings at SEMICON West 2013
 - July 8-11, 2013 in San Francisco, California
- Cycle 4 and 5-2013 Critical Dates for SEMI Standards Ballots
 - Cycle 4, 2013
 - Ballot Submission Date: May 20, 2013
 - Voting Period Starts: June 1, 2013
 - Voting Period Ends: July 1, 2013
 - Cycle 5, 2013
 - Ballot Submission Date: July 18, 2013
 - Voting Period Starts: July 29, 2013
 - Voting Period Ends: August 28, 2013
- SEMI Standards Publications
 - Standards published from January 2013 to March 2013:
 - New Standards: 9
 - Revised Standards: 14
 - Reapproved Standards: 2
 - Withdrawn Standards: 2

- There are a total of 871 SEMI Standards in portfolio and that includes 93 Inactive standards
- Major Items Included in the Revision to the *SEMI Regulations*
 - This revision to the *Regulations* added a new category called Complementary Files
 - Complimentary files are considered an official part of a standard or safety guideline
 - Complimentary files are NOT in PDF file format
 - Otherwise, they would be conjoined to the standard or safety guideline which are published in the PDF file format
 - They could be in any non-PDF format that is required for use with a standard or safety guideline
 - The TC Chapters decide which non-PDF files are complimentary
 - If they are not complimentary, then they are considered non-official and are categorized as *Various Materials*
 - If they are complimentary, then the files must be balloted if they are revised or added to a standard or safety guideline
 - Other Major Items
 - Global Technical Committee Structure
 - All regional and local TC become chapters and are independent regardless of whether an RSC exist in their region
 - Formation and Disbandment of Global Technical Committee
 - Formation and Disbandment of TC Chapter under existing Global Technical Committee
 - Elimination of Regional Standards
 - Intellectual Property (IP) section (§15 in the *Regulations*)
 - There is now an exit mechanism for Letter of Assurances in “limbo”
 - More clarification for Letter of Intent and the discovery of IP after a standard is published
- Major Items Included in the Revision to the *SEMI Procedure Guide*
 - The *Procedure Guide* was revised to align with changes in the *Regulations*
 - Added the TFOF as Appendix 2
 - Addition of recommendation for author and/or the TF leader to distribute draft ballot to all TF members 7 days prior to Letter Ballot submission
- Global Activity Report
 - North America has the most TFs, SNARFs, and ballots followed by Japan and Europe
 - Please see the attached Staff Report for detailed information and other regions
- Request to Members
 - Looking for details on how standards are actually used:
 - Development/Engineering

- Procurement
- Manufacturing
- Interview should take less than 30 minutes – contact James Amano (jamano@semi.org) or any Standards staff
- SEMI N.A. Standards staff contact: Michael Tran, mtran@semi.org

Discussion: Mark and Win asked everyone for MEMS outreach with the Compound Semiconductor Materials Committee. Mark said the term inactive could carry a negative stigma. There should be categories of inactive documents to see which documents are really inactive.

Attachment: 03, SEMI N.A. Standards Staff Report (Spring 2013)

4 Ballot Review

NOTE 1: Committee adjudication on the ballots are detailed in the Audits & Reviews (A&R) Subcommittee Forms for procedural review. These A&R forms are available as attachments to these minutes. The attachment number for each ballot document is provided under each ballot review section below.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5514	Line Items Revisions to SEMI MS5-1211, Test Method for Wafer Bond Strength Measurements Using Micro-Chevron Test Structures	
Line Item 1	Revision to Referenced Standards and Documents	Line Item 1 passed as balloted. Superclean
Line Item 2	Revisions to Terminology	Line Item 2 passed as balloted. Superclean
5267	New Standard: Specification for Microfluidic Port and Pitch Dimensions	Failed committee review.
5515	Revision to SEMI MS7-0708, Specification for Microfluidic Interfaces to Electronic Device Packages	Failed committee review.

Motion: Line Items 1 and 2 of Document #5514 passed committee review and will be forwarded to A&R SC for procedural review.

By / 2nd: Richard Allen (SEMATECH) / Steve Martell (Sonoscan)

Discussion: None.

Vote: 5-0 in favor. Motion passed.

Attachment: 04, 5514ProceduralReview

Motion: Documents #5267 and #5515 failed committee review and will be returned to the TF for rework.

By / 2nd: Richard Allen (SEMATECH) / Steve Martell (Sonoscan)

Discussion: None.

Vote: 5-0 in favor. Motion passed.

Attachment: 05, 5267 Procedural Review FAILED

Attachment: 06, 5515 Procedural Review FAILED

5 Subcommittee & Task Force Reports

5.1 *International Terminology TF*

5.1.1 Steve Martell (Sonoscan) reported for the International Terminology Task Force. Steve will revise Document #4719A, Revision to MS03-07, *Terminology for MEMS Technology with title change to: Terminology for MEMS / NEMS Technology* to align with the new terminologies of Document #5514 (see §4) after its publication.

5.2 *Materials Characterization TF*

5.2.1 Janet Cassard and Jason Gorman from NIST reported for the Materials Characterization TF. The TF met at NIST on March 28, 2013 before the NA Standards Spring 2013 Meetings. Janet said the 49 Reference Materials (RMs) have been approved for the MEMS 5-in1 Test Chip RMs 8096 and 8097. The paperwork for them such as the Report of Investigations (ROIs) were also approved. Since the NIST special publication SP 260-174 is now SP 260-177, Janet will draft SNARFs to update the footnotes in SEMI MS2 and MS4.

For more details on what are RMs, ROIs, and more, please visit: <http://www.nist.gov/srm/definitions.cfm>

5.2.2 Jason Gorman talked about dynamic characterization and he is seeing if there would be interest from companies for dynamic characterization standards to possibly forming a new TF. The new TF will be developing standards on measurements techniques to dynamic characterization of MEMS. Win suggested drafting an online survey to gauge the companies' interests and he would help Jason with it. Mark said companies would be more interested if it involves MEMS testing. Hopefully, the results will be in by SEMICON West 2013 for discussion.

Attachment: 07, Materials Characterization TF Minutes (Spring 2013)

Action Item: 2013Apr#01, Jason Gorman to draft a dynamic characterization interest survey and send it to the committee chairs for review and launch it before SEMICON West 2013.

5.3 *Microfluidics TF*

5.3.1 Mark Crockett (MEMSMART) reported for the Microfluidics TF. The TF has much work to do as they will review the documents that failed committee review (see §4) and update them per the feedback received from voters. The TF will review the updated failed documents more at SEMICON West and ballot them sometime after.

5.4 *Packaging TF*

5.4.1 Steve Martell (Sonoscan) reported for the Packaging TF. Steve is still looking for a TF co-leader, preferably an expert in the area of outgassing for MEMS packaging. He will try to find someone at SEMICON West 2013. Mark will check with John Das to see if there is anyone in the field of outgassing who might be interested in being the TF co-leader.

5.5 *Reliability TF*

5.5.1 Mark Crockett (MEMSMART) reported for the Reliability TF. There were no new activities and Dr. Ravi Doraiswami has stepped down as the TF leader. The committee will keep the TF open for now and if there are anyone interested in becoming the TF leader, please let the committee know.

5.6 *Wafer Bond TF*

5.6.1 Richard Allen (NIST) reported for the Wafer Bond TF. There were no new activities except the TF balloted Document #5514 and the committee approved it (see §4).

6 Old Business

6.1 5-Year Review Documents Update

#	Details	Status
SEMI MS3-0307	Terminology for MEMS Technology	See §5.1
SEMI MS6-0308	Guide for Design and Materials for Interfacing Microfluidic Systems	See Action Item, 2012Oct#03 in Table 7
SEMI MS7-0708	Specification for Microfluidic Interfaces to Electronic Device Packages	Balloted for Cycle 2-13 and failed committee review.

7 New Business

7.1 Standards Webinar Project

7.1.1 As discussed during the NA Regional Standards Committee, SEMI will be developing pilot webinars to present at SEMICON West 2013. Some key items:

- Education and training for new and existing members,
- Promotion of SEMI/SEMI Standards activities, and
- Member recruitment tool

Janet Cassard has a webinar and Mark Crockett is thinking about doing one too, especially in the key areas for MEMS. They will contact staff should anything develops.

7.2 New SNARFs

#	Type	SC/TF/WG	Details
---	SNARF	Materials Characterization TF	Line Item Revision to SEMI MS2-0212, Test Method for Step Height Measurements of Thin Films <i>Note: SNARF will be submitted after the committee meeting to the MEMS/NEMS GCS for approval</i>
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7.3 Authorized Ballots

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8 Action Item Review

8.1 Old Action Items

8.1.1 Michael Tran (SEMI N.A.) reviewed the old action items. These can be found in the Old Action Items table at the beginning of these minutes.

8.2 New Action Items

8.2.1 Michael Tran (SEMI N.A.) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

9 Next Meeting and Adjournment

9.1 The next N.A. MEMS/NEMS standards meetings will be held on July 08, 2013 at the San Francisco Marriott Marquis Hotel in San Francisco, CA in conjunction with SEMICON West 2013.

*Tentative schedule:

Monday, July 08

- Wafer Bond TF (9:00 AM - 10:00 AM)
- Microfluidics TF (10:00 AM - 11:00 AM)
- Packaging TF (11:00 AM - 11:30 AM)
- Terminology TF (11:30AM - 12:30 PM)
- Materials Characterization TF (1:30 PM - 2:30 PM)
- N.A. MEMS/NEMS Committee (2:30 PM - 4:30 PM)

*All times are in PST. Times and dates are subject to change without notice. For meeting details, registration, the latest schedule, and travel information, please visit <http://www.semi.org/node/45276>

Having no further business, a motion was made to adjourn the N.A. MEMS/NEMS committee meeting on April 1, 2013 in conjunction with the N.A. Standards Spring 2013 Meetings at SEMI Headquarters in San Jose, California. Adjournment was at 4:18 PM PST.

Respectfully submitted by:

Michael Tran
Senior Standards Engineer
SEMI North America
Phone: 1-408-943-7019
Email: mtran@semi.org

Minutes approved by:

Mark Crockett (MEMSMART), Co-chair	May 7, 2013
Win Baylies (BayTech Group), Co-chair	May 7, 2013
Janet Cassard (NIST), Co-chair	May 7, 2013

Table 8 Index of Available Attachments #1

#	<i>Title</i>	#	<i>Title</i>
01	SEMI Standards Required Meeting Elements	05	5267 Procedural Review FAILED
02	MEMS/NEMS Meeting Minutes (Fall 2012)	06	5515 Procedural Review FAILED
03	SEMI N.A. Standards Staff Report (Spring 2013)	07	Materials Characterization TF Minutes (Spring 2013)
04	5514ProceduralReview		

#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 Michael Tran at the contact information above.