

## North America MEMS / NEMS Technical Committee Chapter Meeting Summary and Minutes

North America Standards SEMICON West 2014 Meetings  
Monday, July 07, 2014, 3:30 – 5:00 PDT  
San Francisco Marriott Marquis Hotel in San Francisco, California

### Next N.A. MEMS / NEMS TC Chapter Meeting

The next N.A. MEMS / NEMS Technical Committee Chapter meeting tentatively scheduled for November 3, 2014 at SEMI Headquarters in San Jose, California in conjunction with the N.A. Standards Fall 2014 meetings. Exact meeting date and details will be announced when finalized and available at <http://www.semi.org/en/node/50511>

### Table 1 Meeting Attendees

**Co-Chairs:** Win Baylies (BayTech-Resor)

**SEMI Staff:** Michael Tran

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
BayTech-Resor	Baylies	Win	NIST	Allen	Richard
Bevan Wu & Associates	Wu	Bevan	Sonoscan	Martell	Steve
ITRI	Chang	Luu	Tesec Inc.	Altiveros	Jan
Materion	Johnson	Chris	SEMI N.A.	Tran	Michael

*\*Italics indicate virtual participants*

### Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
N.A. MEMS/NEMS TC Chapter		Steve Martell (Sonoscan) as new co-chair, <i>pending NARSC approval</i>

### Table 3 Ballot Results

There were no ballots reviewed.

### Table 4 Authorized Activities

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
4820	Withdrawal of SNARF	N.A. MEMS/NEMS TC Chapter	Specification for MEMS Reliability Design, Materials Selection, Process and Testing Method

### Table 5 Authorized Ballots

There were no authorized ballots.

### Table 6 New Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2014Jul#01	Michael Tran	To follow up with the Microfluidics TF leader, Mark Tondra (Diagnostic Biosensors) on the status of the TF documents and the future of the TF.
2014Jul#02	Steve Martell	To talk to potential MEMS committee members at the SMTA/IWLPC event in San Jose, California on November 11-13.

**Table 7 Old Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>	<i>Status</i>
2013Oct#01	Michael Tran	Share feedback from the committee regarding the SEMI Standards Twitter account to SEMI	CLOSED
2013Oct#02	Steve Martell	Work on Document 4719B (Terminology for MEMS / NEMS Technology) now that SEMI MS5 (Wafer Bond Strength Measurements Using Micro-Chevron Test Structures) was published.	Open
2013Oct#03	Michael Tran	Let SEMI Standards Publications know to send the publication proofs for documents 5586 and 5587.	CLOSED
2013Oct#04	Michael Tran	Let Steve Martell know about the Japan Packaging committee's interest in the Packaging TF.	CLOSED
2013Jul#01	Steve Martell	Send Michael Tran the contact information of potential outgassing members.	Open
2013Jul#02	Mariam Sodaka	Send a table from an SOI document to the Wafer Bond TF to create a survey for an SOI related MEMS standard.	Open
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.	Open; on hold until 2014
2012Oct#01	Steve Martell	Reach out to the Japan Assembly & Packaging committee for possible TF leader candidates and related MEMS packaging activities.	Open
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

## 1 Welcome, Reminders, and Introductions

1.1 Win Baylies (BayTech-Resor) called the meeting to order at 3:38 PM (PDT). 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 N.A. MEMS NEMS TC Chapter reviewed the minutes of the previous meeting during Fall 2013.

**Motion:** To approve the previous meeting minutes from Fall 2013.

**By / 2<sup>nd</sup>:** Richard Allen (NIST) / Steve Martell (Sonoscan)

**Discussion:** None.

**Vote:** 6-0 in favor. Motion passed.

**Attachment:** 02, N.A. MEMS / NEMS TC Chapter Meeting Minutes (Fall 2013)

## 3 Liaison Reports

### 3.1 North America Standards Staff Report

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

- Upcoming SEMI Global Events in 2014
  - SEMICON Taiwan
    - September 3-5, 2014 in Taipei
  - Strategic Materials Conference

- September 30 – October 1, 2014 in Santa Clara, California\
- SEMICON Europa Plastic Electronics
  - October 7-9, 2014 in Grenoble, France
- SEMICON Japan
  - December 3-5, 2014 in Tokyo
- Standards Workshop at SEMICON West 2014
  - Wafer Geometry Control for Advanced Semiconductor Manufacturing
    - Important developments and future needs in wafer geometry for advanced semiconductor manufacturing.
    - Presenters from IBM, Intel as well as key equipment companies.
    - Proposals discussed during this workshop will be considered for standardization by the Advanced Wafer Geometry TF under the Silicon Wafer Committee.
- Standards Update at SEMICON West 2014
  - Semiconductor Technology Symposium (STS) Session
    - Metrics Standards Activities Update
      - Topic: Challenges, Innovations and Drivers in Metrology
    - 3DS-IC Standards Activities Update
      - Topic: Embracing what's NEXT – Devices & Systems for Big Data, Cloud and IoT
  - TechXPOT Session
    - Facilities & Gases Standards Activities Update
      - Topic: Subcomponent Supply Chain Challenges for 10 nm and Beyond
    - Compound Semiconductor Materials Standards Activities Update
      - Topic: Disruptive Compound Semiconductor Technologies
  - SEMI Standards Publications Stats
    - April 2014 – June 2014
      - New Standards: 6
      - Revised Standards: 20
      - Reapproved Standards: 4
      - Withdrawn Standards: 0
    - Total SEMI Standards in portfolio: 909
      - Includes 106 Inactive Standards
- Upcoming NA Standards Meetings
  - NA Standards Fall 2014 Meetings
    - November 3-6, 2014 in SEMI HQ in San Jose, California
  - NA Standards Spring 2015 Meetings
    - (Tentative) March 30 – April 2, 2015 SEMI HQ in San Jose, California

- NA Standards Meetings at SEMICON West 2015
  - (Tentative) July 13-16, 2015 in San Francisco, California
- SEMI NA Standards staff contact: Michael Tran, mtran@semi.org

**Discussion:** None.

**Attachment:** 03, N.A. Standards Staff Report (West 2014)

#### 4 Ballot Review

4.1 There were no ballots to review.

#### 5 Subcommittee & Task Force Reports

##### 5.1 MEMS International Terminology Task Force

5.1.1 Steve Martell (Sonoscan) reported for the MEMS International Terminology TF. Steve will work on completing Document 4719B, *Revision to SEMI MS3-0307, Terminology for MEMS Technology with title change to: Terminology for MEMS / NEMS Technology*. The TF will be inactive after Document 4719B is approved and published.

**Action Item:** 2013Oct#02, Steve Martell to work on Document 4719B (Terminology for MEMS / NEMS Technology) now that SEMI MS5 (Wafer Bond Strength Measurements Using Micro-Chevron Test Structures) was published.

##### 5.2 MEMS Materials Characterization TF

5.2.1 The N.A. MEMS / NEMS TC Chapter reported for the MEMS Materials Characterization TF. Janet Cassard (NIST), the previous TF leader has retired and there are no future activities planned for the TF. The committee approved to make the TF inactive.

**Motion:** To approve making the Material Characterization TF inactive.

**By / 2<sup>nd</sup>:** Win Baylies (BayTech-Resor) / Steve Martell (Sonoscan)

**Discussion:** None.

**Vote:** 7-0. Motion passed.

##### 5.3 Microfluidics TF

5.3.1 The N.A. MEMS / NEMS TC Chapter reported for the Microfluidics TF. The TF still has four SNARFs:

- Doc. 4819, New Standard, Test Method for Electroosmotic Mobility in Microfluidic Systems
- Doc. 5267, New Standard: Specification for Microfluidic Port and Pitch Dimensions
- Doc. 5268, New Standard: Test Method for Autofluorescence of Materials
- Doc. 5515, Revision to SEMI MS7-0708, Specification for Microfluidic Interfaces to Electronic Device Packages

Also SEMI MS6-0308, *Guide for Design and Materials for Interfacing Microfluidic Systems* is up for five year review.

**Action Item:** 2014Jul#01, Michael Tran to follow up with the TF leader, Mark Tondra (Diagnostic Biosensors) on the status of the documents and the future of the TF.

#### 5.4 Packaging TF

5.4.1 The N.A. MEMS / NEMS TC Chapter reported for the Packaging TF. The TF is still looking for an expert in the area of outgassing to serve as TF leaders. SEMI MS8-0309, *Guide to Evaluating Hermeticity of MEMS Packages* is due for five year review. The TF will ballot SEMI MS8 for reapproval ballot at the NA Standards Fall 2014 Meetings.

#### 5.5 Reliability TF

5.5.1 The N.A. MEMS / NEMS TC Chapter reported for the Reliability TF. The TF will be inactive until a new TF leader is found. The committee approved to withdraw SNARF #4820, *Specification for MEMS Reliability Design, Materials Selection, Process and Testing Method* because the SNARF activity has been inactive for many years now.

**Motion:** To approve the withdrawal of SNARF #4820.  
**By / 2<sup>nd</sup>:** Richard Allen (NIST) / Bevan Wu (BW & Associates)  
**Discussion:** None.  
**Vote:** 7-0. Motion passed.

#### 5.6 Wafer Bond TF

5.6.1 Richard Allen (NIST) reported for the Wafer Bond TF. Richard said most of the Wafer Bond activities are in the 3DS-IC committee. The MEMS committee approved to transfer the MEMS Wafer Bond documents (SEMI MS1 and MS5) pending acceptance to the 3DS-IC Wafer Bond TF because the future status of the MEMS committee is unknown.

**Motion:** To transfer SEMI MS1 and SEMI MS5 pending acceptance to the 3DS-IC Wafer Bond TF.  
**By / 2<sup>nd</sup>:** Richard Allen (NIST) / Bevan Wu (BW & Associates)  
**Discussion:** None.  
**Vote:** 6-0. Motion passed.

### 6 Old Business

#### 6.1 5-Year Review Documents Update

#	Details	Status
SEMI MS3-0307	Terminology for MEMS Technology	Steve Martell working on Document 4719B (see §5.1 of these minutes).
SEMI MS6-0308	Guide for Design and Materials for Interfacing Microfluidic Systems	Michael Tran to contact Mark Tondra (see action item 2014Jul#01 in Table 6 of these minutes).
SEMI MS7-0708	Specification for Microfluidic Interfaces to Electronic Device Packages	Michael Tran to contact Mark Tondra (see action item 2014Jul#01 in Table 6 of these minutes).

### 7 New Business

#### 7.1 The Future of the MEMS / NEMS Committee

7.1.1 The N.A. MEMS / NEMS TC Chapter discussed the following topics regarding the future of the MEMS / NEMS committee:

- New leadership
- New areas and topics in MEMS
  - “Nano’s” Role in Future Electronics
- Potential key members participating in the MEMS / NEMS committee

#### 7.1.1.1 *New Co-chair of the Chapter*

7.1.1.1.1 The previous N.A. MEMS / NEMS TC Chapter co-chairs Mark Crockett (MEMSMART) has stepped down and Janet Cassard (NIST) has retired. With the Chapter needing a new co-chair, Steve Martell (Sonoscan) volunteered to be a co-chair. He was approved as the new N.A. MEMS / NEMS TC Chapter Co-chair pending further approval by the Regional Standards Committee at the N.A. Standards Fall 2014 Meetings.

**Motion:** To approve Steve Martell (Sonoscan) as the new N.A. MEMS / NEMS TC Chapter co-chair pending further approval by the N.A. Regional Standards Committee at the N.A. Standards Fall 2014 Meetings.

**By / 2<sup>nd</sup>:** Richard Allen (NIST) / Steve Martell (Sonoscan)

**Discussion:** None.

**Vote:** 6-0. Motion passed.

#### 7.1.1.2 *New Areas and Topics in MEMS / NEMS*

7.1.1.2.1 The N.A. MEMS / NEMS TC Chapter discussed potential new areas for the committee to look at such as nanotechnology. Steve Martell said the MEMS / NEMS committee could expand outside of its current scope to include nanotechnology, but the committee lack members with expertise in nanotechnology. He said lack of participation in the committee is still a concern as they don’t have the members to drive the TFs and the committee. He still doesn’t have a member who is an expert in outgassing for the Packaging TF. Win Baylies said another problem is that it is difficult to standardized new MEMS activities because most of the MEMS companies out there are each doing their own thing.

#### 7.1.1.3 *Potential Key Members Participating in the MEMS / NEMS Committee*

7.1.1.3.1 The Chapter looked at other MEMS organizations for potential members to recruit into the MEMS / NEMS committee. Richard Allen said the MEMS Industry Group (MIG) has many members and their meetings always have good attendance. The question is how to leverage MIG into SEMI standards? Steve said to publicize and promote SEMI Standards MEMS / NEMS activities at MIG meetings. Win added there will have to be volunteers to do this.

7.1.1.3.2 Richard suggested another organization to look at is the Surface Mount Technology Association (SMTA) that has MEMS related activities. The SMTA will be organizing the International Wafer-Level Packaging Conference in San Jose, California on November 11-13, 2014. Steve will attend the conference to speak to potential members for the MEMS/ NEMS committee. Win recommended Steve to target members for leadership in the TFs and discuss to members topics for nanotechnology activities.

**Action Item:** 2014Jul#02, Steve Martell to talk to potential MEMS committee members at the International Wafer-Level Packaging Conference event in San Jose, California on November 11-13.

## 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 are tentatively scheduled for November 3, 2014 at SEMI Headquarters in San Jose, California in conjunction with the N.A. Standards Fall 2014 meetings. Exact meeting date and details will be announced when finalized and available at <http://www.semi.org/en/node/50511>

**\*Tentative Schedule:**

Monday, November 3:

- 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)
- N.A. MEMS / NEMS TC Chapter (2:30 PM - 4:30 PM)

\*All times are in Pacific Time. 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/en/node/50511>

9.2 Having no further business, a motion was made to adjourn the N.A. MEMS / NEMS TC Chapter meeting on July 07, 2014 in conjunction with the N.A. Standards SEMICON West 2014 Meetings at the San Francisco Marriott Marquis Hotel in San Francisco, California.

- Motion:** To adjourn the N.A. MEMS / NEMS TC Chapter meeting.  
**By / 2<sup>nd</sup>:** Win Baylies (BayTech-Resor) / Bevan Wu (BW & Associates)  
**Discussion:** None.  
**Vote:** Unanimous in favor. Motion passed.

Respectfully submitted by:

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

Minutes approved by:

Win Baylies (BayTech-Resor), Co-chair	September 4, 2014
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**Table 8 Index of Available Attachments #1**

#	Title
01	SEMI Standards Required Meeting Elements
02	N.A. MEMS / NEMS TC Chapter Meeting Minutes (Fall 2013)

#	<i>Title</i>
03	SEMI N.A. Standards Staff Report (West 2014)

#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](http://www.semi.org). For additional information or to obtain individual attachments, please contact Michael Tran at the contact information above.