



# MEMS/NEMS North America TC Chapter

## Meeting Summary and Minutes

NA Standards Fall Meetings 2019  
 Monday, November 4, 10:00 – 12:00 Pacific  
 SEMI Global Headquarters, Milpitas, California/USA

### TC Chapter Announcements

*Next TC Chapter Meeting*

NA Standards Spring Meetings 2020

Monday, March 30, 10:00 – 12:00 Pacific

SEMI Global Headquarters, Milpitas, California/USA

### Table 1 Meeting Attendees

*Italics indicate virtual participants*

**Co-Chairs:** Steve Martell (Nordson SONOSCAN)

**SEMI Staff:** Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
<i>AM Fitzgerald &amp; Associates</i>	<i>Fitzgerald</i>	<i>Alissa M.</i>	<i>SoftMEMS LLC</i>	<i>Maher</i>	<i>Mary Ann</i>
BW & Associates	Wu	Bevan	SEMI	Chung	Soomin
<i>Lam Research</i>	<i>Bourke</i>	<i>Michelle</i>	SEMI	Nguyen	Laura
Nordson SONOSCAN	Martell	Steve	SEMI	Sansone	Carmelo

### Table 2 Leadership Changes

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
MEMS/NEMS NA TC Chapter <i>(to be voted on at tonight's NARSC meeting)</i>	Open	Michelle Bourke (Lam Research)
MEMS Reliability Task Force <i>(reactivated)</i>	None	Allyson Hartzell (Veryst)

### Table 3 Committee Structure Changes

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
None	MEMS Reliability Task Force <i>(reactivated)</i>

### Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
6018	New Standard: Specification for Silicon Substrates used in Fabrication of MEMS Devices	<b>Passed</b> ; as balloted.

#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**

None

**Table 6 Authorized Activities**

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

None

#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
6007	Cycle 2-2020	MEMS Material Characterization TF	New Standard: Guide for Use of Test Patterns for Characterizing a Deep Reactive Ion Etching (DRIE) Process

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

None

**Table 9 SNARF(s) Abolished**

None

**Table 10 Standard(s) to receive Inactive Status**

None

**Table 11 New Action Items**

Item #	Assigned to	Details
2019Nov#01	Michelle, Laura	Schedule DRIE Working Meetings. <b>Completed. Closed.</b>
2019Nov#02	Laura Nguyen	Send MEMS Reliability SNARF to Michelle, Mary Ann, and Alissa. <b>Sent to Michelle. Closed.</b>
2019Nov#03	Laura, Carmelo, Soomin	Announce publication of 6018 at MSTC in February 2020 and set up a meeting for MSIG WG to meet. <b>Doing topic tables instead of meeting. Completed. Closed.</b>
2019Nov#04	Steve, Alissa	Find out if MEMS/MSIG WG can meet at Sensors Expo (San Jose, June 2020). <b>Spoke with Charlene in December. Plan to meet early January. Unsure if Sensors Expo is meeting F2F due to pandemic. Closed.</b>
2019Nov#05	Task Force	Prepare Document 6007 for Cycle 2-2020. <b>Did not complete for Cycle 2-2020. Closed.</b>

**Table 12 Previous Meeting Action Items**

None

**1 Welcome, Reminders, and Introductions**

Steve Martell (Nordson SONOSCAN) called the meeting to order at 10:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

**Attachment:** SEMI Standards Required Meetings Elements



## 2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

- Motion:** To accept the previous meeting minutes as written.  
**By / 2<sup>nd</sup>:** Steve Martell (Nordson SONOSCAN) / Bevan Wu (BW & Associates)  
**Discussion:** None.  
**Vote:** 2-0 in favor. Motion passed.

**Attachment:** [2019West] MEMS NEMS NA TC Chapter Meeting Minutes FINAL

## 3 Liaison Reports

### 3.1 SEMI Staff Report

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

#### SEMI Global Calendar of Events

- SEMICON Europa (November 12-15; Munich, Germany)
- SEMICON Japan (December 11-13; Tokyo, Japan)
- SEMICON Korea (February 5-7; Seoul, Korea)

#### Upcoming North America Standards Meetings

- NA Standards Spring 2020 Meetings (March 30-April 2, SEMI HQ in Milpitas, California)
- SEMICON West 2020 Meetings (July 20-23, Moscone Center, San Francisco, California)
- NA Standards Fall 2020 Meetings (November 2-5, SEMI HQ in Milpitas, California)

#### Letter Ballot Critical Dates for 2019

- Cycle 8-2019: Ballot Submission Due: Oct 11/Voting Period: Oct 25 – Nov 25
- Cycle 9-2019: Ballot Submission Due: Nov 14/Voting Period: Nov 26 – Dec 26
- Cycle 1-2020: Ballot Submission Due: Jan 6/Voting Period: Jan 15 – Feb 14
- Cycle 2-2020: Ballot Submission Due: Jan 30/Voting Period: Feb 11 – Mar 12
- Cycle 3-2020: Ballot Submission Due: Mar 11/Voting Period: Mar 25 – Apr 24

Critical Dates: <http://www.semi.org/en/Standards/Ballots>

#### Standards Publications Report

<i>Cycle</i>	<i>New</i>	<i>Revised</i>	<i>Reapproved</i>	<i>Withdrawn</i>
March 2019	2	3	0	0
April 2019	2	12	5	0
May 2019	1	1	1	0
June 2019	2	9	2	0

Total in portfolio – 1,010 (includes 269 Inactive Standards)

#### New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
July 2019	SEMI S30	Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes	EHS	NA



July 2019	SEMI 3D20	Specification for Panel Characteristics for Panel Level Packaging (PLP) Applications	3D-IC	NA
August 2019	SEMI A3	Specification for Printed Circuit Board Equipment Communication Interfaces (PCBEI)	Automation Technology	TW
August 2019	SEMI HB11	Specification for Sapphire Single Crystal Ingot Intended for Use for Manufacturing HB-LED Wafers	HB-LED	CH
September 2019	SEMI E177	Specification for Transmission Electron Microscope (TEM) Lamella Carriers Used in Electron Microscopy Workflow	PIC	NA
October 2019	SEMI 3D21	Guide for Describing Glass-Based Material for Use in 3DS-IC Process	3D-IC	NA
October 2019	SEMI PV91	Specification for Trichlorosilane Used in Polysilicon Production	Photovoltaic	CH

**Inactive Standards**

<i>Committee</i>	<i>Number of Inactive Standards</i>
Assembly & Packaging	48
Automated Test Equipment	2
Compound Semiconductor Materials	4
Environmental Health & Safety	8
Facilities	15
FPD – Equipment	5
FPD – Factory Automation	14
FPD – Materials & Components	13
Gases	18
Information & Control	37
Liquid Chemicals	24
MEMS	3
Metrics	9
Micropatterning	30
Photovoltaic	1
Physical Interfaces & Carriers	19
Silicon Wafer	11
Traceability	8

[connect@SEMI](#) - Contact your staff if a TF Site is desired

- Web link - <https://connect.semi.org>
  - Login using Standards account (username and password)
- Program Member
  - Join any task forces; Post discussion thread
- TF Leader/Community Admin; contact your staff if a TF Site is desired
  - Add member; Upload meeting minutes
  - Communicate TF members
- Details
  - [www.semi.org/standards](http://www.semi.org/standards) >> Committee Info >> Collaboration Community

Regulations & Procedure Manual

- *Regulations* (Feb 28, 2019)
  - Latest version clarifies procedures applicable for Copyrighted Items and trademarks



- *Procedure Manual* (Feb 28, 2019)
- *Style Manual Version 6* (March 25, 2019)
  - Additions and revisions to harmonize with updated *Regulations* and *Procedure Manual*
  - Updates
    - *Company or Organization Trademarks* (Table 1, #1-24)
    - *Active vs. Passive Voice* (Table 4, #4-4)
    - *Word Usage* (Table 4, #4-5)
    - *New Safety Guideline Conformance Notice* (Table 8, #8-1)

Nonconforming Titles (See PM Appendix 4) {None}

Five-Year Review {None}

SNARF 3 Year Status, TC Chapter may grant a one-year extension {None}

**Attachment:** Staff Report November 2020\_MEMS NEMS

#### 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 Document # 6018, New Standard: Specification for Silicon Substrates used in fabrication of MEMS Devices

- The ballot passed TC Chapter review as balloted. See attachment for ballot adjudication.

**Attachment:** 6018\_Ballot Review\_v2

#### 5 Subcommittee and Task Force Reports

The following task forces are currently inactive:

- Packaging TF
- Reliability TF
- Terminology TF
- Wafer Bond TF

##### 5.1 MEMS Microfluidics Task Force

This Task Force did not meet. There is no update at this time.

##### 5.2 Joint MSIG, MEMS Substrate, and MEMS Material Characterization Task Force

The Joint Task Force was held during the Committee meeting. The key items are as follows:

- Reviewed SEMI Draft Document 6007, New Standard: Guide for Use of Test Patterns for Characterizing a Deep Reactive Ion Etching (DRIE) Process
  - Recommend to ballot in Cycle 2-2020 if ready
  - Laura to schedule working meetings for DRIE document



- Reactivate MEMS Reliability Task Force
  - Next step: SNARF
- Overview of MSEC (MEMS & Sensors Executive Conference)
  - Mary Ann gave a talk on emerging technology
- Discussed MEMS Standards awareness opportunities
  - MSTC 2020, Feb 24-27
  - Sensors Expo, June 2020 (Steve and Alissa to reach out to program coordinators for that event)

The Committee reviewed Draft Document 6007 during the committee meeting and decided to ballot for voting in Cycle 2-2020.

**Motion:** To ballot Document 6007 in Cycle 2-2020.  
**By / 2<sup>nd</sup>:** Steve Martell (Nordson SONOSCAN) / Bevan Wu (BW & Associates)  
**Discussion:** None.  
**Vote:** 2-0. Motion passed.

The Committee reviewed TFOF for the MEMS Reliability Task Force.

**Motion:** To approve TFOF for MEMS Reliability TF.  
**By / 2<sup>nd</sup>:** Bevan Wu (BW & Associates) / Steve Martell (Nordson SONOSCAN)  
**Discussion:** None.  
**Vote:** 2-0. Motion passed.  
**Attachment:** TFOF\_ReliabilityTF

## 6 Old Business

### 6.1 Previous Action Items

Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further old business.

## 7 New Business

### 7.1 Agenda Items

A number of New Business items on the SEMICON West agenda was not addressed at the committee because of time restraints. The below will be addressed at the next MSIG WG meeting or at the next MEMS Committee meeting.

- 7.1 SEMI | MSIG Working Groups
  - 7.1.1 Manufacturing WG: Discuss new focus options
  - 7.1.2 Device WG: Environment/Gas Sensors next steps
- 7.2 MIPI Alliance, LoRa Alliance
- 7.3 Standards at SEMI
- 7.4 MEMS needed in Europe, Asia, China?
- 7.5 Other identified challenges to work on



## 8 Next Meeting and Adjournment

The next meeting is scheduled for Monday, March 30, in conjunction with the NA Standards Spring 2020 Meetings at SEMI Headquarters in Milpitas, California. See <http://www.semi.org/standards-events> for the current list of events.

Tentative Schedule:

TBD Microfluidics (TF)

10:00-12:00 Joint MSIG, MEMS Substrate, and Material Characterization (TFs) and MEMS / NEMS (C)

Adjournment: 11:24.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: [lnguyen@semi.org](mailto:lnguyen@semi.org)

Minutes tentatively approved by:

Steve Martell (Nordson SONOSCAN), Co-chair	<Date approved>
Michelle Bourke (Lam Research), Co-chair	<Date approved>

Minutes approved by: **MEMS/NEMS NA TC Chapter on November 16, 2020**

**Table 13 Index of Available Attachments<sup>#1</sup>**

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meetings Elements	6018_Ballot Review_v2
[2019West] MEMS NEMS Meeting Minutes FINAL	TFOF_ReliabilityTF
Staff Report Nov 2019_MEMS NEMS	

#3 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 Laura Nguyen at the contact information above.