



Physical Interfaces & Carriers North America TC Chapter

Meeting Summary and Minutes

SEMICON West Standards Meetings 2019
 Wednesday, July 10, 10:00 – 12:00 Pacific
 Moscone Center, San Francisco, California

TC Chapter Announcements

Next TC Chapter Meeting

NA Standards Fall Meetings 2019

Wednesday, November 6, 10:00 – 12:00 Pacific

SEMI Global Headquarters, Milpitas, California/USA

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Matt Fuller (Entegris), Melvin Jung (Intel)

SEMI Staff: Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Acteon NEXT Corporation	Komatsu	Shoji	<i>Self</i>	<i>Wagner</i>	<i>Peter</i>
<i>Brooks Automation</i>	<i>Babbs</i>	<i>Daniel</i>	Shin-Etsu Polymer Co., Ltd.	Shida	Hiroyuki
Daifuku Co., Ltd.	Yamagata	Kenji	SUMCO	Nakai	Tetsuya
Entegris	Fuller	Matthew	TDK	Kanashiro	Kiyoshi
Hitachi High-Technologies Corp.	Ikota	Masami	Thermo Fisher Scientific	Kwakman	Laurens
<i>Hitachi High-Technologies Corp.</i>	<i>Onishi</i>	<i>Tsuyoshi</i>	Thermo Fisher Scientific	Morrison	Troy
<i>Intel</i>	<i>Jung</i>	<i>Melvin</i>	Tokyo Electron Limited	Mashiro	Supika
Middlesex Corporation	Horn	George	UA Associates	Hartsough	Larry
Murata Machinery, Ltd.	Tominaga	Tadamasa	SEMI Japan	Yanagisawa	Chie
Self	Crockett	Alan	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
6311A	New Standard: Specification for TEM Lamella Carrier Used in Electron Microscopy Workflows	Passed , with editorial changes

#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

None

Table 7 Authorized Ballots

None

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

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2019July#01	Laura Nguyen	To clarify footnote in Style Manual with SEMI.

Table 12 Previous Meeting Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2017April#04	Laura Nguyen	To identify which documents under the global task force belong to which committees. Ongoing.

1 Welcome, Reminders, and Introductions

Matt Fuller (Entegris) called the meeting to order at 10:00 Pacific. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meeting 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 / 2nd: Shoji Komatsu (Acteon NEXT) / Supika Mashiro (TEL)

Discussion: None.

Vote: 12-0 in favor. Motion passed.

Attachment: [2019Spring] PIC NA Spring Meeting Minutes FINAL



3 Liaison Reports

3.1 Physical Interfaces & Carriers Europe TC Chapter

There is no update at this time. The next PIC Europe TC Chapter will tentatively be held in conjunction with SEMICON Europa 2019.

3.2 Physical Interfaces & Carriers Japan TC Chapter

Kenji Yamagata (Daifuku Co., Ltd.) reported for the Physical Interfaces & Carriers Japan TC Chapter. Of note:

Meeting Information

- Last meeting
 - April 18 at the Japan Standards Spring 2019 Meetings; SEMI Japan office, Tokyo, Japan
- Next meeting
 - September 20 at the Japan Standards Fall 2019 Meetings; SEMI Japan office, Tokyo, Japan

Leadership

- Committee Co-chairs
 - Tsuyoshi Nagashima (Miraial)
 - GCS voting member, PI&C Committee representative to the JRSC
 - Kenji Yamagata (DAIFUKU)
 - GCS voting member
 - Noriyoshi Toyoda (Hirata Corporation)
- Technical Architect
 - Shoji Komatsu (Acteon NEXT)

Leadership Structure Changes

- 300mm Tape Frame PI&C Task Force
 - TF leader stepped down
 - Masayuki Azuma (Tokyo Seimitsu)

Current Structure of Japan TC Chapter {See attachment for Org Chart}

Activities Approved via GCS between Meetings

- 6485, New Standard: Specification for Panel FOUP for Panel Level Packaging
 - GCS approved revision SNARF and authorized for ballot on June 25
 - Balloted in Voting Cycle 6-2019
- 6486, New Standard: Specification for Panel FOUP Loadport for Panel Level Packaging
 - GCS approved revision SNARF and authorized for ballot on June 25
 - Balloted in Voting Cycle 6-2019

Authorized Activities {See attachment for detail}

Authorized Ballots {See attachment for detail}

Task Force Highlights

300mm Tape Frame PI&C Task Force

- Leaders: Hayato Iwamoto (Sony Semiconductor Solutions), Hisashi Gotoh (Sony Semiconductor Solutions), Naomune Taniguchi (Tokyo Seimitsu)
- SNARFs approved
 - New Standard: SPECIFICATION FOR 300mm TAPE FRAME FOUP
 - New Standard: SPECIFICATION FOR 300mm TAPE FRAME FOUP LOAD PORT
 - New Standard: SPECIFICATION FOR FRONT OPENING INTERFACE BETWEEN 300mm TAPE FRAME FOUP AND LOAD PORT



- New Standard: SPECIFICATION FOR BOLTS OF 300mm TAPE FRAME FOUP LOAD PORT
- New Standard: SPECIFICATION FOR INDICATOR PLACEMENT ZONE AND SWITCH PLACEMENT VOLUME OF 300mm TAPE FRAME FOUP LOAD PORT
- Discussion
 - End-Effector Exclusion Volume inside the FOUP to be considered

Panel Level Packaging (PLP) Panel FOUP Task Force

- Leaders: Shoji Komatsu (Acteon NEXT), John Rudolph (Intel)
- The revised SNARFs approved and Ballot submission authorized for Cycle 6 on June 25
 - 6485, New Standard: Specification for Panel FOUP for Panel Level Packaging
 - 6486, New Standard: Specification for Panel FOUP Loadport for Panel Level Packaging

Five-Year Review

Designation	Standard Title	Action By	Assigned to
SEMI E166-0814	Specification for 450 mm Cluster Module Interface: Mechanical Interface and Transport Standard	Summer 2019	Global PIC Maintenance TF

Staff Contact: Chie Yanagisawa, SEMI Japan (cyanagisawa@semi.org)

Attachment: 201907_JA-PIC_for-NA_v1.0

3.3 SEMI Staff Report

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

SEMI Global Calendar of Events

- SEMICON Taiwan (September 18-20; Taipei, Taiwan)
- 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 Fall 2019 Meetings (November 4-7, SEMI HQ in Milpitas, California)
- 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)

Letter Ballot Critical Dates for 2019

- Cycle 6-2019: Ballot Submission Due: Jul 19/Voting Period: Jul 31 – Aug 30
- Cycle 7-2019: Ballot Submission Due: Aug 22/Voting Period: Sept 4 – Oct 4
- 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

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

Standards Publications Report

Cycle	New	Revised	Reapproved	Withdrawn
March 2019	1	5	6	0



April 2019	1	4	6	0
May 2019	0	16	5	0
June 2019	1	5	0	0

Total in portfolio – 1,003 (includes 268 Inactive Standards)

New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
March 2019	SEMI PV90	Guide for Material Requirements of Internal Feeders Used in Monocrystal Silicon Growers	Photovoltaic	China
April 2019	SEMI A2	Specification for Surface Mount Assembler Smart Hookup (SMASH)	Automation Technology	Japan
June 2019	SEMI 3D19	Test Method for Adhesive Strength of Adhesive Tray Used for Thin Chip Handling	3D Packaging & Integration	Japan

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	29
Photovoltaic	1
Physical Interfaces & Carriers	19
Silicon Wafer	11
Traceability	8

[connect@SEMI](https://connect.semi.org) - 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 >> 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)
- SNARF (Feb 2019)

What is a Trademark?

- Trademarks are brands that owners consider to be valuable intellectual property.
- It can be a company name, an acronym, a graphical symbol, or a product name, even a software product. Products that are trademarked services are usually called service marks.
- Anyone can claim to trademark something, not already in use by others, to identify and distinguish it from others.
- Trademarks are identified in two ways:
 - A TM is used for claimed trademarks; SM is used for claimed service marks
 - The symbol ® is used for trademarks registered with the US Patent Office or other national trademark offices.

Why are the Rules for Trademarks Clarified?

- As part of SEMI policy to avoid any appearance of restraint of trade, the *Regulations* allow incorporation of trademarks in Standards Documents only under specific conditions.
- Hence, incorporation of a trademark in a Standards Document without complying with those conditions is a violation of the *Regulations*.
- It was brought to the attention of the ISC Regulations Subcommittee that a number of SEMI Standards Documents include trademarks or even require use of trademarked products without indicating that they were trademarks, who owned them, or the existence of a record of TC Chapter approval of that use.
- The *Regulations* already stated where & how trademarks could be used.
- After review of the rules, the Regs SC decided that the procedures for approving the incorporation of trademarks and the way they are presented needed to be clarified. Changes were incorporated in the June 8, 2018 and the Feb. 28, 2019 versions of the *Regulations* and the *Style Manual*.

Responsibilities of the TC Chapter (Summary of Rules and Procedures)

- See *Regulations* §§ 1.5.11 & 16.4 for official requirements
- Don't include company/organization names in official parts or Notes, except in footnotes and for SDOs in subheadings of Referenced Standards and Related Documents sections.
 - Many SDO names and acronyms are trademarked
 - SEMI Publications is assembling a list, for the *Style Manual*, of trademarked SDO names, acronyms and whether they are registered
 - Do not need to indicate that SEMI is trademarked.
- Only include trademark for a branded item if technically justified (only if it meets requirements) and approved by TC Chapter vote.
 - Currently, assessment & approval is also required for inclusion of any trademark
 - Regs SC is reviewing the requirements for the trademarked SDOs name and acronym used in subheadings mentioned above.
- Research whether a brand for an item is trademarked by owner and if it is registered
 - Owner's website (also get official name of owner)
 - <http://www.uspto.gov>; <http://www.inta.org> (international)



- At first convenient usage of a trademark in a Document:
 - Ensure that it is represented with the proper symbol (see *Style Manual 1-24*)
 - Also give the generic term for the product, if possible
 - Add a footnote that references the owner's name
- Corrections to a Document that uses a not-acknowledged trademark may be made editorially, if done properly (see *Regulations ¶ 16.4.4.1.1* and Note 48)

Examples

- Example 1 for a product trademarked name
 - Not acknowledged: Kleenex
 - Not allowed: Kimberly-Clark Kleenex®
 - Allowed: Kleenex^{®1}
 - Preferred: Kleenex^{®1} brand tissue (straight quote from box)
 - ¹ Kleenex trademark is owned by Kimberly-Clark Corporation.
- Example 2 for trademarked SDO name in subheadings of applicable sections
 - ASTM[®] Standards¹
 - ¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA; Telephone: +1.610.832.9585, Fax: +1.610.832.9555, <http://www.astm.org>. ASTM trademark is owned by ASTM International.

Nonconforming Titles (See PM Appendix 4) {None}

Five-Year Review

- SEMI E83-0515, Specification for PGV Mechanical Docking Flange

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

Attachment: Staff Report July 2019_PIC

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 # 6311A, New Standard: Specification for TEM Lamella Carriers Used in Electron Microscopy Workflows

- The ballot passed TC Chapter review with editorial changes. See attachment for ballot adjudication.

Attachment: 6311A_Ballot Review

5 Subcommittee and Task Force Reports

5.1 Panel Level Packaging Panel FOUP Task Force

Shoji Komatsu (Acteon NEXT) reported for this Task Force. Of note:

Discussion/Voting

- FOUP Ballot Proposal
 - Discussion and QA

- Is there no problem with the same KC pin size as 450 for heavy Panel?
 - Fix any problems in future tests.
- Add that center support is optional.
- Add x70, y70 and y71 to FIG.7.
- Add background
- Voting 1: Ballot Submission Timing (FOUP ballot for Cycle.6, LP ballot for Cycle.8)
 - Motion by Alan
 - Second by Yamagata-san (Motion pass)
- Automation Flange proposal *{See attachment for image}*
 - Voting 2: Automation Flange (Add the Automation Flange feature into Appendix section [Option])
 - Motion by Ito-san
 - Second by Yamagata-san (Motion pass)
- Next Step
 - TF agree the update SNARFs (FOUP/LP)
 - Modified SNARF and Ballot submission approved by GCS
 - Complete the Ballot document: ~ Friday, July 19, 2019
 - Target timing: Cycle 6, 2019; FOUP Ballot: Doc.6485
 - Target timing: Cycle 8, 2019; Loadport Ballot: Doc.6486

Attachment: Panel FOUP TF meeting minutes rev0-20190709

5.2 Electron Microscopy Workflow Task Force

Troy Morrison (Thermo Fisher Scientific) reported for this Task Force. Of note:

Reviewed Ballot Results as mentioned in Section 4

TEM Workflow Taskforce: What will be the focus of next phase activities?

- A Recap of the Automated TEM Workflow
 - The TEM lamella carrier is the support vehicle for TEM samples (lamellas) that are processed in the different systems that are part of the TEM workflow
 - FIB/SEM for sample preparation and extraction from wafer
 - TEM for sample analysis
 - Plasma cleaner for sample cleaning (optional)
 - The TEM lamella carrier needs to be transported between the different systems that are part of the TEM workflow
 - This long distance transport requires the use of a mechanical support for the TEM lamella carrier(s): the lamella carrier (LC) “container”
 - Phase 1 workflow automation requires a clear definition (SEMI Standard) for the lamella carrier and lamella carrier “container”
- Rational for a SEMI Standard for LC container
 - Automation efforts for lamella carrier transport at tool level require a well defined LC container, that is standardized to allow that lamella carriers can be transported between different types of TEM workflow tools from different suppliers
 - Analogy with wafer handling: if TEM lamella carrier = Silicon wafer, then the LC container = FOUP
 - At (FIB/TEM/auxiliary) tool level a LC container load station is needed
 - At (FIB/TEM/auxiliary) tool level a tool specific front-end module is needed to transfer LCs from the LC container into the tool specific LC holders (e.g. the TEM-rod at the TEM side)



- Next Steps
 - Obtain consensus at Taskforce level about the next TF activities beyond the LC specifications (doc 6311A)
 - A new LC container SEMI Standard
 - Any other standardization activities?
 - Formalize the new TF activities in a new SNARF document
 - Prepare a new SNARF document for the new TF activities
 - Review SNARF document with the Task force members
 - Have the new SNARF document approved by TC

Action Item: 2019July#1, Laura to clarify with SEMI appropriate use of footnote.

Attachment: SEMI TF meeting 9July2019_PICupdate V3_atm

6 Old Business

No old business was presented.

7 New Business

No new business was presented

8 Next Meeting and Adjournment

The next meeting is scheduled for Wednesday, November 6, in conjunction with the NA Standards Fall 2019 Meetings at SEMI Headquarters in Milpitas, California. See <http://www.semi.org/standards-events> for the current list of events.

Tentative Schedule:

Tuesday, November 5

13:00-15:00 Electron Microscopy (EM) Workflow TF

15:00-17:00 Japan Panel Level Packaging Panel FOUP TF

Wednesday, November 6

10:00-12:00 PIC (C)

Adjournment: 11.15.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

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Minutes tentatively approved by:

Matthew Fuller (Entegris), Co-chair	August 11, 2019
Melvin Jung (Intel), Co-chair	August 11, 2019

Minutes approved by: **PIC NA TC Chapter on November 6, 2019**

Table 13 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meeting Elements	6311A_Ballot Review
[2019Spring] PIC NA Spring Meeting Minutes FINAL	Panel FOUP TF meeting minutes rev0-20190709
201907_JA-PIC_for-NA_v1.0	SEMI TF meeting 9July2019_PICupdate V3_atm
Staff Report July 2019_PIC	

#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. For additional information or to obtain individual attachments, please contact Laura Nguyen at the contact information above.