Flexible Hybrid Electronics North America TC Chapter

Meeting Summary and Minutes

SEMICON West Standards Meetings 2025
Thursday, October 9, 09:00–12:00 Noon Mountain
Phoenix Convention Center, Phoenix, Arizona/USA, and via Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

Next TC Chapter Meeting

Flex Technology Summit 2026
February TBD
The Wigwam Resort, Arizona/USA

Table 1 Meeting Attendees

Co-Chairs: Randall Parker (ASI), Ahmed Busnaina (Northeastern University)
SEMI Staff: Laura Nguyen, Paul Trio

Company	*Last*	*First*	*Company*	*Last*	*First*
Auburn University	Lall	Pradeep	*Northeastern University*	*Busnaina*	*Ahmed*
Corning Inc	*Deng*	*Daniel*			
DISCO Hi-Tec America	Parker	Randall	SEMI	Nguyen	Laura
ChemCubed	*Slep*	*Dan*	SEMI	Trio	Paul

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*TC Chapter Action*
7193A	New Standard: Guide for Substrate Design of Flexible Hybrid Electronics Based on Additive Printing Methods	**Failed**
7242	New Standard: Guide for Reliability of Flexible Hybrid Electronics	**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

#	*Type*	*SC/TF/WG*	*Details*
7242	Ballot Authorization	FHE Reliability TF	New Standard: Guide for Reliability of Flexible Hybrid Electronics ***– Approved for Cycle 7-2025, by GCS on 07/22/2025***

Table 6 Authorized Activities

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

None

Table 7 Authorized Ballots

Listing of documents authorized by the Originating TC Chapter for Letter Ballot.

None

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

None

Table 9 SNARF(s) Canceled

None

Table 10 Standard(s) to receive Inactive Status

None

Table 11 New Action Items

None

Table 12 Previous Meeting Action Items

None

1 Welcome, Reminders, and Introductions

Randall Parker (ASI), called the meeting to order at 09:18 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 Elements (File name: 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:	By: Pradeep Lall / Auburn University Second: Daniel Slep / ChemCubed
Discussion:	None
Vote:	4-0 in favor. Motion passed.

Attachment: [2025Spring] FHE NA TC Chapter Meeting Minutes

3 Liaison Reports

3.1 *Flexible Hybrid Electronics Taiwan TC Chapter*

Laura Nguyen (SEMI HQ) reported for the Taiwan TC Chapter. Of note:

Meeting Information

- Last meeting: March. 26, 2025, 14:00 – 16:00, Web Meeting, Taiwan.
- Next meeting: TBD

TC Chapter Leadership *(Refer to attachment for Org Chart)*

- Co-chairs: Steve Huang/ AIQ, YE Yeh/ ASE

Ballot Results: None

Authorized Activities

- SNARF for Local Area Sensing Network for FHE System Task Force
  - New SNARF was discussed by TC members in FHE Taiwan TC Meeting on Mar. 26, 2025
  - New SNARF proposal will be sent out for 2 weeks review by Global FHE TC member.
  - After 2 weeks review, the SNARF will be sent to FHE GCS Members for approval.

Staff Contact: Cheryl Chuang, cchuang@semi.org

Attachment: Liaison Report_FHE Taiwan_20250326_R1_LNN

3.2 *Flexible Hybrid Electronics Japan TC Chapter*

Laura Nguyen (SEMI HQ) reported for the Japan TC Chapter. Of note:

Meeting Information

- Last meeting: Friday, May 30, 2025, SEMI Japan Office + OVTCCM (Hybrid)
- Next meeting: Friday, October 17, 2025, KOMORI CORPORATION Tsukuba plant, Ibaraki, Japan/ OVTCCM (Hybrid)

TC Chapter Leadership *{Refer to attachment for Org Chart}*

- Co-chairs: Satoshi Maeda/ TOYOBO, Ryoichi Watanabe/ Japan Display Inc., Tadahiro Furukawa/ Yamagata University

Ballot Results:

- 6906, New Standard: *Terminology for Flexible Hybrid Electronics*
  - Failed

Authorized Ballots (Cycle 7-2026)

- Doc 6906A, New Standard: *Terminology for Flexible Hybrid Electronics*

Task Force Highlights

- FHE Terminology Task Force
    - The Task Force met in July to revise ballot document, #6906A, New Standard: Terminology for Flexible Hybrid Electronics (FHE)
- Tactile Texture Characteristics for FHE Task Force
    - TF was designated as dormant by the TC Chapter on January 31, 2025.
    - There are no activities to be reported.
- Flexible Hybrid Electronic (FHE) Maintenance Task Force
    - This TF was formed to conduct following activities:
    - Maintenance
        - 5-Year review document
        - Improvement of readability to prevent misreading
        - Improvement of cross reference capability
    - Ballot review: Meeting regarding Doc 7193A and 7242.

Staff Contact: Nahoko Koga, nkoga@semi.org

Attachment: Liaison Report_FHE Japan TC Chapter_Oct 2025_R0_distr

3.3 *SEMI Staff Report*

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

- SEMI Global 2025 & 2026 Calendar of Events
    - SEMCON West (Oct 7-9; Phoenix, Arizona)
    - SEMICON Europa (Nov 18-21; Munich, Germany)
    - SEMICON Japan (December 17-19; Tokyo, Japan)
    - SEMICON Korea (Feb 11-13; Seoul, Korea)
    - SEMICON China (March 25-27; Shanghai, China)
    - SEMICON Southeast Asia (May 5-7, 2026; Kuala Lumpur, Malaysia)
- SEMICON West 2025-2030
    - **2025—October 7-9 | Phoenix Convention Center | Phoenix, AZ**
    - 2026—October 13-15 | Moscone Center | San Francisco, CA
    - **2027—October 12-14 | Phoenix Convention Center | Phoenix, AZ**
    - 2028—October 10-12 | Moscone Center | San Francisco, CA
    - **2029—October 9-11 | Phoenix Convention Center | Phoenix, AZ**
    - 2030—October 29-31 | Moscone Center | San Francisco, CA
- Global Standards Summit (GSS) 2025 @ SEMICON West
    - Date/Time: Tuesday, October 7 | 1:30 PM to 5:30 PM | North Building, 200 Level, Room 229A
    - Theme: Future Standards for Connected & Sustainable Semiconductor Manufacturing
    - Session Description: The Global Standards Summit is a strategic forum dedicated to identifying standards-critical areas and advancing an industry-wide standardization roadmap for the next 3- and 7-year horizons. Building on the momentum of the inaugural Summit—which spotlighted essential topics such as

environmental sustainability—this year's gathering continues that dialogue while expanding focus to include emerging challenges like supply chain traceability.

- With increasing fragmentation across the global microelectronics supply chain driven by geopolitical and other disruptive forces, the need for unified standards is more critical than ever. This Summit provides a timely opportunity to convene, collaborate, and identify the standards that will address these challenges and foster greater industry alignment. We encourage you to join, engage, and help shape the future of standards.
- https://www.semiconwest.org/programs/global-standards-summit

- Workshops @ SEMICON West 2025

- SEMI Liquid Chemicals Analytical Workshop
  - Description: Focusing on recent advances in analytical methodology and instrumentation
  - Wednesday, October 8, 09:00-11:30 (North Bldg | Room 229B)
- Enhancing Voltage Sag Immunity: SEMI F47 Standard Updates & Insights
  - Description: Delivering practical recommendations to enhance the SEMI F47 standard and increase tool resilience in future designs, with a focus on power quality conditions, equipment susceptibility, testing approaches, and mitigation strategies.
  - Wednesday, October 8, 14:30-16:30 (North Bldg | Room 229B)
- Semiconductor Device Manufacturing in a Cleanroom (Best Practices to Improve Product Reliability and Yield) [SEMIU]
  - Description: Provides the fundamentals and thought processes to improve your production reliability & yield.
  - Thursday, October 9, 8:00 AM - 4:00 PM (North Bldg | 200 Level)

- Upcoming NA Meetings 2025 (Proposed)

- NA Standards Winter Meetings: Feb 23-26, 2026 (tentative), at SEMI HQ, Milpitas, California/USA
- NA Spring Meetings (in conjunction with ASMC): May 11-14, 2026, Hilton Albany, New York
  - *{refer to attachment for additional information on ASMC}*
- SEMICON West Meeting: Oct 12-15, 2026, at Moscone Center, San Francisco, CA/USA

- 2025 Critical Dates for SEMI Standards Ballots

- Cycle 8-2025: Ballot Submission Due: Sept 3/Voting Period: Sept 24 – Oct 24
- Cycle 9-2025: Ballot Submission Due: Oct 14/Voting Period: Oct 29 – Nov 28

- 2026 Critical Dates for SEMI Standards Ballots *(Tentative)*

- Cycle 1-2026: Ballot Submission Due: Dec 16/Voting Period: Jan 7 – Feb 6
- Cycle 2-2026: Ballot Submission Due: Jan 23/Voting Period: Feb 11 – Mar 13
- Cycle 3-2026: Ballot Submission Due: Mar 5/Voting Period: Mar 18 – Apr 17
- Cycle 4-2026: Ballot Submission Due: Mar 30/Voting Period: Apr 14 – May 14
- Cycle 5-2026: Ballot Submission Due: May 8/Voting Period: May 27 – June 26
- https://www.semi.org/en/collaborate/standards/ballots

- Standards Publications Report

Cycle	*New*	*Revised*	*Reapproved*	*Withdrawn*
May 2025	0	5	4	0
June 2025	1	0	0	0
July 2025	1	4	0	0
August 2025	0	1	0	0
September 2025	4	1	3	0

Total in portfolio – 1,107 (includes 373 Inactive Standards)

New Standards

Cycle	*Designation*	*Title*	*Committee*	*Region*
June 2025	SEMI M94	Specification for Silicon Carbide Engineered Substrates	Compound Semiconductor Materials	EU
July 2025	SEMI E194	Guide to Using a Liquid Particle Counter to Assess Particulate Surface Contamination on Critical Chamber Components and Coupons	Metrics	NA
September 2025	SEMI E195	Test Method Using Adhesive Replacement Substrates to Assess Particulate Surface Contamination on Critical Chamber Components	Metrics	NA
September 2025	SEMI E196	Guide for Equipment Edge Data Governance	Information & Control	TW
September 2025	SEMI M95	Test Method for Net Carrier Density and Resistivity of Silicon Epitaxial Layer by Capacitance-Voltage Measurements with an Evaporated Metal Schottky Diode	Silicon Wafer	JP
September 2025	SEMI T26	Specification for Electronic Supply Chain Traceability Using Distributed Ledger Technology	Traceability	NA

Educational Courses under Development

- {EDA} Everything You Need to Know about the SEMI Equipment Data Acquisition (EDA) Standards Suite
  - Objective: Introduce EDA standards, best practices for implementation, and addresses concerns about adoption through example use cases
  - Course Date: November 20, 2025, in conjunction with SEMICON Europa
  - Status: Confirmed, under development
- {Subfab} Intro to Sub-fab Course
  - Objective: Gain a comprehensive understanding of SubFAB operations, including system components, facility layouts, environmental and sustainability considerations, organizational structure, safety and maintenance best practices, and incident-response preparedness within the semiconductor manufacturing ecosystem.
  - Course Date: Early 2026 (2 sessions, EU & Asia friendly)
  - Status: Under development
- Other courses being considered: SECS/GEM, Seals, Cybersecurity
- *Interested in shaping future educational courses with us? Please reach out to SEMI staff.*

Regulations & Procedure Manual

- Regulations (Feb 20, 2024): https://www.semi.org/sites/semi.org/files/2024-02/Standards%20Regulations%20February%2020%202024.pdf
- Procedure Manual (July 7, 2025)
  - https://www.semi.org/sites/semi.org/files/2025-07/Procedure%20Manual%20July%2007%2C%202025%20v1.pdf
  - Noticeable updates:
    - Major revision to multiple Standards
      - New SNARF Form (July 2025)
    - Ballot checklist requirement for Revision to Primary Standard

Five-Year Review

- None

Staff Contact: Laura Nguyen, Lnguyen@semi.org

Attachment: Staff_HQ Report Oct 2025 v4_distr

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 file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7193A, New Standard: Guide for Substrate Design of Flexible Hybrid Electronics Based on Additive Printing Methods

- The committee found the negative related and technically persuasive. The ballot failed and returned to the task force for re-work and re-ballot.

Motion:	Negative from **Tadahiro Furukawa / Yamagata University #1** is related and persuasive.
By / 2nd:	By: Randall Parker / DISCO Hi-Tec America, Inc. Second: Daniel Slep / ChemCubed
Discussion:	Section 8 and 9 suggestion to move to Appendix
Vote:	4-0 in favor. Motion passed.

Motion:	This Document failed TC Chapter review and will be returned to the TF for rework.
By / 2nd:	By: Pradeep Lall / Auburn University Second: Randall Parker / DISCO Hi-Tec America, Inc.
Discussion:	None
Vote:	4-0 in favor. Motion passed.

Attachment: 07-25-Flexible Hybrid Electronics

4.2 Document # 7242 — New Standard: Guide for Reliability of Flexible Hybrid Electronics

- The ballot passed TC Chapter review with editorial changes. Refer to the attachment for ballot adjudication.

Attachment: 7242_ProceduralReview

5 Task Force Reports

5.1 *FHE Design Task Force*

The Task Force is working on document 7193 rework. There is no report at this time.

5.2 *FHE Inks Characterization Task Force*

The Task Force is working on drafting document 7212. There is no report at this time.

5.3 *FHE Reliability & Testing Task Force*

Doc 7242 ballot was reviewed during this meeting. Refer to § 4 for Ballot Review. There is no report at this time.

5.4 *FHE Assembly Task Force (has not met)*

Jarrid Wittkopf (HP) stepped down as TF leader due to job title change and John Williams (Boeing) currently has no bandwidth, therefore both TF leaders have stepped back on SEMI Standards activities until further notice.

6 Old Business

None

7 New Business

None

8 Action Item Review

8.1 No New Action Items. There is no further business.

9 Next Meeting and Adjournment

9.1 The next meeting is tentatively scheduled for the week of February 24-26, 2026, in conjunction with Flex Technology Summit in Arizona/USA. Please check the SEMI Standards website for updates: https://www.semi.org/en/products-services/standards

Adjournment: 12:49.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Randall Parker (DISCO USA), Co-chair	<Date approved>
Ahmed Busnaina (Northeastern University), Co-chair	<Date approved>

Minutes approved by: **XXXX**

Table 13 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Elements	Staff_HQ Report Oct 2025 v4_distr
[2025Spring] FHE NA TC Chapter Meeting Minutes	07-25-Flexible Hybrid Electronics
FHE Taiwan Liaison Report_20250326_R1	7242_ProceduralReview
Liaison Report_FHE Japan TC Chapter_Oct 2025_R0_distr	

#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 Laura Nguyen at the contact information above.