Compound Semiconductor Materials Europe TC Chapter

Meeting Summary and Minutes

SEMICON Europa 2024
Thursday, November 14, 11:30 – 13:00 CET
International Congress Center Messe München (ICM), München, Germany

TC Chapter Announcements

Next TC Chapter Meeting

Spring Meeting, April 2025

via Official Virtual TC Chapter Meeting (OVTCCM)

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Arnd Weber (SiCrystal GmbH)
SEMI Staff: Laura Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
DENSO	*Aoki*	*Yutaka*	Scientic Visual	Cheze	Caroline
Fraunhofer IISB	Kranert	Christian	SiCrystal GmbH	Weber	Arnd
Freiberger Compound Materials GmbH	Kretzer	Ulrich	*SOITEC*	*Cela*	*Enrica*
Global Wafers	Sanna	Cristina	Tokyo Electron Limited	Mashiro	Supika
Kitabatake	*Kitabatake*	*Makoto*	Wolfspeed	Barbieri	Tom
KLA	*Kallus*	*David*	Wolfspeed	Rao	Shailaja
Munich University of Applied Sciences	Alt	Hans-Christian	SEMI	Nguyen	Laura
Self	Wagner	Peter	*SEMI Japan*	*Yoshida*	*Akiko*

Table 2 Leadership Changes

WG/TF/SC/TC Name	*Previous Leader(s)*	*New Leader(s)*
Compound Semiconductor Materials Europe TC Chapter	Dr. Arnd-Dietrich Weber (SiCrystal)	Dr. Arnd-Dietrich Weber (SiCrystal) Christian Kranert (Fraunhofer IISB) ***[New]***

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7225	New Standard: Specification for Silicon Carbide Engineered Substrates	**Passed**, with technical changes and with or without editorial changes; Ratification Ballot to be issued.

#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 Ratification Ballot Results

None

#1 **Passed** Ratification ballots will be submitted to SEMI publication for final processing.

#2 **Failed** Ratification ballots were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 7 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 8 Authorized Ballots

#	*When*	*TF*	*Details*
7280	Early 2025	5-Year TF	Line-Item Revision to SEMI M83-0820, Test Method for Determination of Dislocation Etch Pit Density in Monocrystals of III-V Compound Semiconductors

Table 9 SNARF(s) Granted a One-Year Extension

#	*TF*	*Title*	*Expiration Date*
7111	SiC Material and Wafer Specification TF	Revision of SEMI M81-0418, Guide to Defects Found in Monocrystalline Silicon Carbide Substrates	Fall 2025

#1 If the Standards Document Development Project is found to be continuing, but cannot be completed within the current project period, the TC Chapter may grant a one-year extension at a time, as many times as necessary. [*Regulations* § 8.3]

Table 10 SNARF(s) Cancelled

None

Table 11 Standard(s) to receive Inactive Status

None

Table 12 New Action Items

None

Table 13 Previous Meeting Action Items

None

1 Welcome, Reminders, and Introductions

1.1 Arnd Weber (SiCrystal GmbH) called the meeting to order at 11:33. 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

2.1 The TC Chapter reviewed the minutes of the previous meeting.

Motion:	To accept the previous meeting minutes as written.
By / 2nd:	By: Christian Kranert / Fraunhofer IISB Second: Maria Cristina Sanna / GlobalWafers Company
Discussion:	None
Vote:	10-0 in favor. Motion passed.

Attachment: CSM EU TC Minutes 08062024

3 Subcommittee and Task Force Reports

3.1 *SiC Material and Wafer Specification TF*

Arnd Weber (SiCrystal GmbH) reported for the SiC Material and Wafer Specification Task Force. Of note:

- M81 Review TF-Status Report
  - SEMI M81-0418, *Guide to Defects Found in Monocrystalline Silicon Carbide Substrates*
    - SNARF 7111
      - "The current version last revied on 2018 shall be updated to latest inspection technologies and defects and their appearance as observed in current situation reviewing 200mm substrates"
    - Scope
      - The revision shall:
        - review new and improved inspection techniques
        - review requirements for 200mm diameters SiC wafers.
        - focus on bulk defect appearance and also on new Xray-Techniques currently entering the market
  - Began working on this activity at the end of 2023, but due to capacity limitations.
  - SNARF's timeline is significantly behind its initial schedule
  - Plan to revise this activity and request to extend the SNARF:

Motion:	Approve a 1 year extension of the project period for the SNARF 7111, Revision of SEMI M81-0418, *Guide to Defects Found in Monocrystalline Silicon Carbide Substrates*
By / 2nd:	By: Shailaja Rao / Wolfspeed Second: Christian Kranert / Fraunhofer IISB
Discussion:	None.
Vote:	9-0 in favor. Motion passed.

Attachment: M81 Review_TF_status_241114

3.2 *Five-Year Review Task Force*

Hans Christian Alt (Munich University of Applied Sciences) reported for the Five-Year Review Task Force. Of note:

- The last activity has been completed and approved.
    - Doc 7233: Line-Item Revision of SEMI M54-0319, *Guide for Semi-Insulating (SI) GaAs Material Parameters*
- TF is currently working on a five-year view revision for SEMI M83.
    - Doc 7280: Line-Item Revision of SEMI M83-0820, *Test Method for Determination of Dislocation Etch Pit Density in Monocrystals of III-V Compound Semiconductors*
    - Request for Letter Ballot Authorization

Motion:	Authorize the Document for Letter Ballot 7280, Line-Item Revision to SEMI M83-0820, *Test Method for Determination of Dislocation Etch Pit Density in Monocrystals of III-V Compound Semiconductors*, in a cycle in early 2025.
By / 2nd:	By: Ulrich Kretzer / Freiberger Compound Materials GmbH Second: Hans Christian Alt / Munich University
Discussion:	None.
Vote:	6-0 in favor. Motion passed.

3.3 *Test Methods Task Force*

Christian Kranert (Fraunhofer) reported for the Five-Year Review Task Force. Of note, there are no activity at this moment.

3.4 *SiC Epi Defects Task Force*

Christian Kranert (Fraunhofer) reported for the SiC Epi Defects Task Force. Of note, the progress for Doc 7160, New Standard: *Guide for Defects found in Homoepitaxial Layers of Silicon Carbide*, is ongoing and hopes to be ready to ballot in Spring of next year.

3.5 *Silicon Carbide Engineered Substrate Task Force*

Enrica Cela (SOITEC) reported for the Silicon Carbide Engineered Substrate Task Force. Of note, Doc 7225 was submitted for ballot and was adjudicated at this meeting. Refer to § 4 for Ballot Review details.

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 # 7225, New Standard: Specification for Silicon Carbide Engineered Substrate

- The ballot passed TC Chapter review with technical changes and with or without editorial changes. A Ratification Ballot to be issued to verify the technical changes. Refer to the attachment for ballot adjudication.

Attachment: 7225_ProceduralReview

5 Liaison Reports

5.1 *Compound Semiconductor Materials North America TC Chapter*

No report was presented.

5.2 *Compound Semiconductor Materials Japan TC Chapter*

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

Meeting Information

- Last Meeting
  - Tuesday, May 21, 2024
  - SEMI Japan Office + OVTCCM (Hybrid)
- Next Meeting
  - Friday, November 8, 2024
  - SEMI Japan Office + OVTCCM (Hybrid)

Leadership

- Masayoshi Obara (Shin-Etsu Handoutai)
- GCS voting member

Organization Chart *{refer to attachment for chart}*

Ballot Results

- 7211: Line Item Revision to SEMI M92-0423, Specification for 4H-SiC Homoepitaxial Wafer
  - Line Item 1, 2: Failed
  - Line Item 3: Passed, with editorial changes
  - Line Item 4, 5: Passed, as balloted

Activities Approved via GCS between Meetings

- SiC Epitaxial Wafer Liaison Task Force
  - 7211: Line Item Revision to SEMI M92-0423, Specification for 4H-SiC Homoepitaxial Wafer
    - SNARF/ Ballot Authorization: Approved by GCS on 02/02/2024

Task Force Highlights

- Silicon Carbide Substrate Liaison Task Force
  - Reviewing Doc.# 6767A, New Standard: Test Method for Flatness of Silicon Carbide Wafers by Optical Interference as well as Doc.#6769B, New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic, which are under development by the Silicon Carbide Substrate Task Force under the Compound Semiconductor Materials China TC Chapter.
  - Continue to communicate with the said Task Force to improve the draft documents.
- SiC Epitaxial Wafer Liaison Task Force
  - No activities in particular

Concerns

- Concerns has been continuously raised regarding operation of China TC Chapter (such as lack of advance notice of TC meetings and uncertainty in information sharing) and the Japan TC Chapter wishes the China TC Chapter and its Task Forces to operate in accordance with the SEMI Standards Regulations.
- Please see 6.1 of the minutes of the previous TC Chapter meeting for details:
- https://downloads.semi.org/standards/minutes.nsf/91eeb64567db378c88256dcf006a4252/279ed5aeffd50c8988258b2e0027c4d7!OpenDocument

Staff Contact: Akiko Yoshida, ayoshida@semi.org

Attachment: CSM_JA TC Chapter Liaison Report_Aug 2024_R0

5.3 *Compound Semiconductor Materials China TC Chapter*

Laura Nguyen (SEMI) reported for the CSM China TC Chapter. Of note:

Meeting Information

- Last Meeting
    - April 26 (Part A) – OVTCCM
    - June 12 (Part B) – Qingdao, Shandong
- Next Meeting
    - Exact date and time will be determined

Leadership

- Jiangbo Wang / HC SEMITEK
- Guoyou Liu/ CRRC TIMES

Ballot Review (Part A)

- 6769B, New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic
    - Failed

Highlights

- New TF formed
    - GaN Task force
- TF Leaders
    - Ronghua Wang– Runxin Micro
    - Guoqiao Tao - Enkris Semiconductor
    - Yi Pei – Dynax

Staff Contact: Cassie Li, cassieli@semi.org

Attachment: CSM China TC Chapter June 2024

6 Old Business

None

7 New Business

None

8 Action Item Review

None

9 Next Meeting and Adjournment

9.1 The next meeting is scheduled for Spring Meetings in April 2025, via OVTCCM, date and time to be determined. Refer to http://www.semi.org/standards-events for the current list of events.

Adjournment: 14:25.

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:

Arnd Weber (SiCrystal GmbH), Co-chair	<Date approved>
Christian Kranert (Fraunhofer IISB), Co-chair	<Date approved>

Table 14 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Meetings Elements	CSM China TC Chapter June 2024
M81 Review_TF_status_241114	CSM_JA TC Chapter Liaison Report_Aug 2024_R0
7225_ProceduralReview	

#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.