



**Compound Semiconductor Materials Committee China TC Chapter  
HB-LED Committee China TC Chapter  
Joint Meeting Summary and Minutes**

China Spring Standards Meeting 2023

April 26<sup>th</sup>, 2023, 08:30-17:30

Dongguan, Guangdong

**TC Chapter Announcements**

*Next TC Chapter Meeting*

China Fall Standards Meeting 2023

TBD, China, 2023

**Table 1 Meeting Attendees**

*Italics indicate virtual participants*

**Co-Chairs:** Jiangbo Wang (HC SEMITEK)

**SEMI Staff:** Cassie Li ( SEMI China), Ein Wu (SEMI China), Isadora Jin (SEMI China)

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
HC SEMITEK	Wang	Jiangbo	Sinopatt	Kang	Kai
<i>Epiworld</i>	<i>Feng</i>	<i>Gan</i>	Sinopatt	Zhang	Neng
Epiworld	Chen	Zhixia	TDG	Wei	Mingde
NAURA	Wang	Xiangang	Dynax	Qian	Hongtu
BST	Liu	Jianzhe	Perfect Crystal	Zheng	Hongjun
Runxin Micro	Wang	Ronghua	AMEC	Liu	Yingbin
Perfect Crystal	Lu	Min	<i>CRRC SEMICONDUCTOR</i>	<i>Li</i>	<i>Chengzhan</i>
SZSMTI	Liu	Zhibin	CETC13	Sun	Niefeng
<i>SAN'AN</i>	<i>Zhang</i>	<i>Jie</i>	TOPE	Ni	Weijiang
<i>HIT</i>	<i>Gan</i>	<i>Yang</i>	CWT	Zheng	Songsen
CETC46	Lin	Jian	AK OPTICS	Ma	Tiezhong
Nata	Chen	Huabin	<i>Enkris</i>	<i>Tao</i>	<i>Guoqiao</i>
KXware	Liu	Bo	Jing'an	Zhang	Heng
Monocrystal	Niu	Chongshi	Linton	Hu	Dongli
VITAL	Su	Xiaoping	STN SEMI	Chen	Jingkun
<i>CRRC TIMES</i>	<i>Liu</i>	<i>Guoyou</i>	STN SEMI	Li	Kui
Huaqiao University	Hu	Zhongwei	Hinp	Huang	Xiaohua
Simbba	Song	Tianrun	Teltec	Liu	Biao
ZJ-Wealth	Ni	Ao	Teltec	Zhao	Zizhong
ulvac	Xie	Liang	Szjinwang	Jin	Daogen
ulvac	Zhang	Ye	Szjinwang	You	Jingxu
Sholaser	He	Jiahao	Cimetrix	Zhou	Rui



Everbright	Li	Shunfeng	GHTOT	Ji	Yong
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**Table 2 Leadership Changes**

WG/TF/SC/TC Name	Previous Leader	New Leader
<i>Compound Semiconductor Materials</i>		
None		
<i>HB-LED</i>		
None		

**Table 3 Committee Structure Changes**

Previous WG/TF/SC Name	New WG/TF/SC Name or Status Change
<i>Compound Semiconductor Materials</i>	
None	
<i>HB-LED</i>	
None	

**Table 4 Ballot Results**

Document #	Document Title	Committee Action
<i>Compound Semiconductor Materials</i>		
6768A	New Standard: Test Method for Micropipe Density of Silicon Carbide Wafer by Laser Reflection	<b>Failed</b>
6769A	New Standard: Test Method Qualitative for Residual Stress of Silicon Carbide Wafers by Photoelastic	<b>Failed</b>
<i>HB-LED</i>		
None		

#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
<i>Compound Semiconductor Materials</i>			
None			
<i>HB-LED</i>			
None			

**Table 6 Authorized Activities**

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

#	Type	SC/TF/WG	Details
<i>Compound Semiconductor Materials</i>			
6769A	Revise SNARF	Silicon Carbide Substrate Task Force	SNARF Title from: New Standard: Test Method Qualitative for Residual Stress of Silicon Carbide Wafers by Photoelastic To: New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic
<i>HB-LED</i>			
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
<i>Compound Semiconductor Materials</i>			
None			
<i>HB-LED</i>			
None			

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

#	TF	Title	Expiration Date
<i>Compound Semiconductor Materials</i>			
None			
<i>HB-LED</i>			
None			

**Table 9 SNARF(s) Abolished**

#	TF	Title
<i>Compound Semiconductor Materials</i>		
None		
<i>HB-LED</i>		
None		

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

Standard Designation	Title
<i>Compound Semiconductor Materials</i>	
None	
<i>HB-LED</i>	
SEMI HB8-0217	Test Method for Determining Orientation of a Sapphire Single Crystal



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

<i>Standard Designation</i>	<i>Title</i>
SEMI HB9-0818	Test Method and Acceptance Criteria for Visual Inspection of Surface Defects of GaN Epitaxial Wafers Used for Manufacturing HB-LED
SEMI HB10-1018	Specification for Single Crystal Sapphire Intended for Use for Manufacturing HB-LED Wafers

**Table 11 New Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
<i>Compound Semiconductor Materials</i>		
None		
<i>HB-LED</i>		
None		

**Table 12 Previous Meeting Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
<i>Compound Semiconductor Materials</i>		
None		
<i>HB-LED</i>		
None		

**1 Welcome, Reminders, and Introductions**

Committee co-chair Jiangbo Wang chaired the meeting and welcomed all attendees. All the attendees introduced themselves. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed.

Agenda was reviewed.

**Attachment:** Compound&HB-LED TC Spring Meeting 2023 Agenda v2

**2 Review of Previous Meeting Minutes**

The TC Chapter reviewed the minutes of the previous meeting.

**Motion:** To approve the minutes of the previous meeting as written

**By / 2<sup>nd</sup>:** Tiezhong Ma (AK OPTICS) / Jianzhe Liu(BST)

**Discussion:** None

**Vote:** 21Y - 0 N, (Total 21 companies.) Motion Passed.

**Attachment:** 3 China CSM&HB-LED TC Joint Winter Meeting Minutes 20221214

**3 Liaison Reports**

*3.1 Compound Semiconductor Materials North America TC Chapter*

Cassie Li (SEMI) reported for the Compound Semiconductor Materials North America TC Chapter. Of note:

**Action Item:** Next meeting –May 17, 2023

- The Co-chair of North America Compound Semiconductor Materials TC is Russ Kremer (Consultant) and Jim Oliver (Northrup Grumman).

- Ballot Results
  - Doc. 6952, Reapproval of SEMI M10-0218 Terminology For Identification Of Structures And Features Seen On Gallium Arsenide Wafers  
Passed as balloted
  - Doc. 6953, Line Item Revision of SEMI M79-0218 Specification For Round 100 mm Polished Monocrystalline Germanium Wafers For Solar Cell Applications  
Passed as balloted
  - Doc. 6954, Line Item Revision of SEMI M23-0811 (Reapproved 0218) Specification For Polished Monocrystalline Indium Phosphide Wafers  
Passed as balloted
  
- Task Force Updates
  - M86 (GaN) Revision TF
    - Doc. 6806, Revision of M86, Specification for Polished Monocrystalline c-Plane Gallium Nitride Wafers (Subject: To revise 1-4 inches diameter)
    - Passed in June 2022 and published as M86-0922

**Attachment:** 5 NA CSM TC Chapter Liaison report Nov 2022 v1

### *3.2 Compound Semiconductor Materials Europe TC Chapter*

Cassie Li (SEMI) reported for the Compound Semiconductor Materials Europe TC Chapter. Of note:

**Action Item:** Next meeting –Spring 2023

- The Co-chair of Europe Compound Semiconductor Materials TC is Arnd Weber (SiCrystal).
- Task Force Highlights
  - SiC TF
    - Leader
      - Arnd Weber (SiCrystal)
    - Doc. 6615, Revision of M55-0817 Specification for Polished Monocrystalline Silicon Carbide Wafers
      - To include 200 mm wafer for Silicon Carbide
    - Ballot passed and forwarded to ISC A&R
    - Document is published as SEMI M55-0921
  - Test Methods TF
    - Leader
      - Christian Kranert (Fraunhofer)
    - Drafting doc. 6870, New Standard: Test Method for Quantifying Basal Plane Dislocations in 4H-SiC by X-ray Topography
  - 5 Year Review TF
    - Leaders
      - Hans Christian – Munich University of Applied Sciences



- Arnd Weber (SiCrystal)
- Reviewing Standards due for 5 year review
  - SEMI M63 - Test Method for Measuring the Al Fraction in AlGaAs on GaAs Substrates by High Resolution X-Ray Diffraction
    - Needs experts to review

**Attachment:** 6 CSM EU TC Chapter Dec 2022

### 3.3 *Compound Semiconductor Materials Japan TC Chapter*

Cassie Li (SEMI) reported for the Compound Semiconductor Materials Japan TC Chapter. Of note:

**Action Item:** Next meeting –2023 Spring

- The Co-chair of Japan Compound Semiconductor Materials TC is Masayoshi Obara (Shin-Etsu Handotai Co., Ltd.).
- Committee Structure Changes
  - SiC Epitaxial Wafer liaison TF (New TF)
- New TFOF
  - Charter: Discussions will be held in Japan to support and complement Silicon Carbide Epitaxial Wafer revision and new standards development activities in other regions.
  - Scope: To cover the scope of the SiC Epitaxial Wafer Task Force for its on existing SEMI Silicon Carbide Standards and new Standards as such become necessary.
- Ballot Review
  - None
- Authorized Activities
  - None
- Task Force Highlights
  - The Japan TC Chapter approved a New TFOF ‘SiC Epitaxial Wafer Liaison TF’. Please refer the New TFOF page.
- 5-Year Review
  - None

**Attachment:** 7 Japan CSM Liaison Report Feb2022 v1

### 3.4 *SEMI Staff Report*

Cassie Li (SEMI China) gave the SEMI Staff Report. Of note:

**Action Item:**

- SEMI International Standards Overview
- SEMI Standards Publications
- 2023 Critical Dates for SEMI Standards Ballots
- NARSC Members
- Organization chart

**Attachment:** 4 SEMI Staff Report

#### 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 6768A, New Standard: Test Method for Micropipe Density of Silicon Carbide Wafer by Laser Reflection

**Motion:** Min Lu (Perfect Crystal) moved that this document failed TC Chapter review and will be returned to the TF for rework.

**By / 2<sup>nd</sup>:** Min Lu (Perfect Crystal) / Niefeng Sun (CETC 13)

**Discussion:** Yong Ji (GHTOT): How to judge the accuracy of standard products?  
Min Lu (Perfect Crystal): Calibration requires a standard sample.

**Vote:** 20 in favor and 0 opposed. (Total 20 companies. 0 companies abstain.) Motion passed.

**Attachment:** 10 SEMI 碳化硅衬底 6768 6769 回应-20230426

4.2 Document 6769A, New Standard: Test Method Qualitative for Residual Stress of Silicon Carbide Wafers by Photoelastic

**Motion:** Min Lu (Perfect Crystal) moved that this Document passed TC Chapter review with technical changes and with or without editorial changes and will be forwarded to the ISC A&R SC for procedural review. A Ratification Ballot will be issued to verify the technical changes

**By / 2<sup>nd</sup>:** Min Lu (Perfect Crystal) / Niefeng Sun (CETC 13)

**Discussion:** Jiangbo Wang (HC SEMITEK): It seems that you guys need more time to do some research for 6769A. These are comparisons of relative values not absolute values.  
Min Lu (Perfect Crystal): This is a qualitative test method, and different differences can be seen through the stress distribution.

**Vote:** 11 in favor and 14 opposed. (Total 25 companies. 0 companies abstain.) Motion failed. Then this Document failed TC Chapter review and will be returned to the TF for rework.

**Attachment:** 10 SEMI 碳化硅衬底 6768 6769 回应-20230426

#### 5 Subcommittee and Task Force Reports

##### 5.1 SiC Epitaxial Wafer Task Force

Zhixia Chen (Epiworld) reported for the 4H-SiC Epitaxial Wafer Task Force. This report contained information on:

##### Action Item:

- Introduced the task force's leaders and members.
- Progress of Documents work:
  - Doc. 6693, New Standard: Specification for 4H-SiC Homoepitaxial Wafer
    - Ballot passed and forwarded to ISC A&R
    - Document is published as SEMI M92-0423
- Work to do
  - 2023Q1-2023Q2: Plan to draft a new standard about 4H-SiC epitaxial wafer carrier concentration test.



- Test method of determining net carrier density profiles in 4H-SiC epitaxial wafers by capacitance-voltage measurements with a mercury probe.

**Attachment:** 8 Report of 4H-SiC epitaxial wafer task force\_20230423V1

### 5.2 Silicon Carbide Substrate Task Force

Min Lu (Perfect Crystal) reported for the Silicon Carbide Substrate Task Force. This report contained information on:

#### Action Item:

- Introduced the task force's leaders and members.
- Documents in Development:
  - Doc.6767: New Standard: Test Method for GBIR, SBIR, GF3R, SFQR and SORI of Silicon Carbide Wafers by Oblique Incident Interference Method
  - Doc.6768: New Standard: Test Method for Micropipe Density of Silicon Carbide Wafer by Laser Reflection
  - Doc.6769: New Standard: Test Method Qualitative for Residual Stress of Silicon Carbide Wafers by Photoelastic
- Specific Work
  - July ,2022, Comparison test work
  - Feb, 2023, Cycle 1, 2023
  - Apr. 11, 2023, Online TF meeting, Discuss the comments to the voting

**Attachment:** 9 SEMI China CSM Std. Technical Committee Silicon Carbide substrate Task Force 20230426

## 6 Old Business

### 6.1 Refer to Table 12 Previous Meeting Action Items

## 7 New Business

### 7.1 Requests for ballot

None

### 7.2 Revise SNARF

7.2.1 DOC. 6769A, New Standard: Test Method Qualitative for Residual Stress of Silicon Carbide Wafers by Photoelastic

Motion: Approve Document 6769A SNARF for title revision

By / 2nd: Min LU (Perfect Crystal) / Niefeng SUN (CETC 13)

Discussion: Min LU (Perfect Crystal): It is better to add qualitative in the title of 6769A.

Vote: 21 in favor and 0 opposed. (Total 21 companies. 0 companies abstain.) Motion passed.





### 7.3 Five-Year-Review

➤ None

### 7.4 Standards to Receive Inactive Status

Motion: Approve SEMI HB8-0217, SEMI HB9-0818, SEMI HB10-1018 to receive inactive status  
 By / 2nd: Tiezhong Ma (AK OPTICS) / Jianzhe Liu(BST)  
 Discussion: None  
 Vote: 25 in favor and 0 opposed. (Total 26 companies. 1 company abstain.) Motion passed.

## 8 Next Meeting and Adjournment

The next meeting of the Compound Semiconductor Materials & HB-LED China TC Chapter is scheduled for TBD, 2023 in China.

For more information, please visit Standards Calendar at <http://www.semi.org/en/standards>

Adjournment: 17:30.

Respectfully submitted by:

Cassie Li

SEMI China

Phone: 86-21-60277645

Email: cassieli@semi.org

Minutes tentatively approved by:

Jiangbo Wang (HC SEMITEK), Compound Semiconductor Materials Committee and HB-LED Committee China TC Chapter Co-chair	2023/5/15
Guoyou Liu (CRRC TIMES), Compound Semiconductor Materials Committee and HB-LED Committee China TC Chapter Co-chair	2023/5/16

**Table 13 Index of Available Attachments#1**

<i>Title</i>	<i>Title</i>
1 Chinese SEMI Standard Meeting Reminders	3 China CSM&HB-LED TC Joint Winter Meeting Minutes 20221214
4 SEMI Staff Report	5 NA CSM TC Chapter Liaison report Nov 2022 v1
6 CSM EU TC Chapter Dec 2022	7 Japan CSM Liaison Report Feb2022 v1
8 Report of 4H-SiC epitaxial wafer task force_20230423V1	9 SEMI China CSM Std. Technical Committee Silicon Carbide substrate Task Force 20230426
10 SEMI 碳化硅衬底 6768 6769 回应-20230426	Compound&HB-LED TC Spring Meeting 2023 Agenda v2



#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 [SEMI Staff Name] at the contact information above.