Compound Semiconductor Materials Committee China TC Chapter

HB-LED Committee China TC Chapter

Joint Meeting Summary and Minutes

China Winter Standards Meeting 2023

January 25th, 2024, 13:30-17:30

Wuxi, Jiangsu

TC Chapter Announcements

Next TC Chapter Meeting

China Spring Standards Meeting 2024

TBD, China, 2024

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Guoyou Liu(CRRC TIMES), *Jiangbo Wang (HC SEMITEK)*
SEMI Staff: Cassie Li (SEMI China), Ein Wu (SEMI China), Isadora Jin (SEMI China)

Company	*Last*	*First*	*Company*	*Last*	*First*
HC SEMITEK	*Wang*	*Jiangbo*	Sinopatt	Zhang	Neng
Epiworld	Zhixia	Chen	TDG	Wei	Mingde
NAURA	Wu	Zhouli	Dynax	Qian	Hongtu
NAURA	Lv	Chunxue	CETC13	Wang	Yang
NAURA	Sun	Yi	CETC13	Sun	Niefeng
BST	*Liu*	*Jianzhe*	TOPE	Zhu	Shuangshuang
Runxin Micro	Wang	Ronghua	AK OPTICS	Ma	Tiezhong
Perfect Crystal	Lu	Min	Enkris	Tao	Guoqiao
Perfect Crystal	Zhang	Jiaqi	*GHTOT*	*Ji*	*Yong*
Perfect Crystal	Zheng	Hongjun	HIT	Gan	Yang
Jing’an	Zeng	Boxiang	Linton	Hu	Dongli
Jing’an	Zhang	Heng	Linton	Peng	Yiqi
Monocrystal	Niu	Chongshi	Everbright	Li	Shunfeng
CRRC TIMES	Liu	Guoyou	TYSIC	Ding	Xiongjie
CRRC SEMICONDUCTOR	Li	Chengzhan	UKING	Chen	Jianming
Semilab	Marcell	Fritz	UKING	Fu	Xiaocui
Semilab	Ge	Ya	UKING	Li	Dongjie
Semilab	Ji	Qingsheng	UKING	LI	Wai
Semilab	Zhang	hang	UKING	Liu	Yonggang
Semilab	Cai	Rui	UKING	Cai	Jinrong
Thermo Fisher	Yang	Weixin	Qualchip	Gu	Jianyu
Thermo Fisher	Zhang	Chunyang	Pengxsemi	Ji	Jianxin

Kinglai	Fan	Zhimin	EV group	Tu	Shuxue
Huayingmicro	Han	Jiguo	ZORRUN	Li	Guoping
Minseoa	Jia	Bin	Heyantech	Xing	Jiutian
Minseoa	Zhang	ShengCheng	Rsic	Zhang	Qingran
Raphael optech	Wan	Xinhua	SECN	Li	Hongji
Raphael optech	Liu	Jinglun	TYSIC	Liu	Wei
Zhejiang University	Huang	Hongjia	SECN	Yan	Hailiang
AMTE	Li	Shuman	*Synlight*	*Zhao*	*Huali*
Self	*YOSHISE*		*VITAL*	*Su*	*Xiaoping*
SZSMTI	*Liu*	*Zhibin*			

Table 2 Leadership Changes

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

Table 3 Committee Structure Changes

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

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
Compound Semiconductor Materials		
None		
HB-LED		
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*
Compound Semiconductor Materials			
None			

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

#	*Type*	*SC/TF/WG*	*Details*
HB-LED			
None			

Table 6 Authorized Activities

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

#	*Type*	*SC/TF/WG*	*Details*
Compound Semiconductor Materials			
None			
HB-LED			
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*
Compound Semiconductor Materials			
6769	Cycle2-24 orCycle3-24	Silicon Carbide Substrate Task Force	New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic
HB-LED			
None			

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

#	*TF*	*Title*	*Expiration Date*
Compound Semiconductor Materials			
6767	Silicon Carbide Substrate Task Force	New Standard: Test Method for GBIR, SBIR, GF3R, SFQR and SORI of Silicon Carbide Wafers by Oblique Incident Interference Method	2025/4/8
6769	Silicon Carbide Substrate Task Force	New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic	2025/4/8
HB-LED			
None			

Table 9 SNARF(s) Abolished

#	*TF*	*Title*
Compound Semiconductor Materials		
6768	Silicon Carbide Substrate Task Force	New Standard: Test Method for Micropipe Density of Silicon Carbide Wafer by Laser Reflection
HB-LED		
None		

Table 10 Standard(s) to receive Inactive Status

Standard Designation	*Title*
Compound Semiconductor Materials	
None	
HB-LED	
None	

Table 11 New Action Items

Item #	*Assigned to*	*Details*
Compound Semiconductor Materials		
None		
HB-LED		
None		

Table 12 Previous Meeting Action Items

Item #	*Assigned to*	*Details*
Compound Semiconductor Materials		
None		
HB-LED		
None		

1 Welcome, Reminders, and Introductions

Committee co-chair Guoyou Liu 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: 2 Compound&HB-LED TC Winter Meeting 2023 Agenda

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 / 2nd:	Yong Ji(GHTOT) / Yang Gan(HIT)
Discussion:	None
Vote:	23Y - 0 N, (Total 23 companies.) Motion Passed.

Attachment: 3 China CSM&HB-LED TC Joint Spring Meeting Minutes 20230426

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:

- 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 –April 9,2024 OVTCCM

- The Co-chair of Europe Compound Semiconductor Materials TC is Arnd Weber (SiCrystal).
- New Task Forces
  - ➢ SiC TF
    1. Silicon Carbide Epi Defects TF
        a) Leader - Christian Kranert (Fraunhofer IISB)
    1. Silicon Carbide Engineered Substrate TF

b) Leader - Enrica Cela (Soitec)

- New SNARFs
    2. SiC Epi Defects TF
        - Doc. 7160, New Standard: Guide for Defects found in Homoepitaxial Layers of Silicon Carbide
    3. Test Methods TF
        - Doc. 7161, Line Item Revision of SEMI M93 - Test Method for Quantifying Basal Plane Dislocation Density in 4H-SiC by X-Ray Diffraction Topography/Imaging

- Task Force Hightlights
    1. SiC TF
        i. Leader: Arnd Weber (SiCrystal)
        ii. Drafting Doc. 7111, Revision of SEMI M81 Guide to Defects Found in Monocrystalline Silicon Carbide Substrates
            - Major revision due to 5 year review
    2. Test Methods TF
        i. Leader: Christian Kranert (Fraunhoffer)
        ii. Drafting doc. 7161, Line Item Revision of SEMI M93-0923 Test Method for Quantifying Basal Plane Dislocation Density in 4H-SiC by X-Ray Diffraction Topography/Imaging

Attachment: 6 CSM EU TC Chapter Dec 2023

3.3 *Compound Semiconductor Materials Japan TC Chapter*

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

Action Item:

- 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)

Attachment: 7 JA CSM Liaison Report Jan 2024 v1.0

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
- 2024 Critical Dates for SEMI Standards Ballots
- NARSC Members
- Organization chart

Attachment: 4 SEMI Staff Report

4 Ballot Review

None

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
    - o Ballot passed and forwarded to ISC A&R
    - o Document is published as SEMI M92-0423

Attachment: 8 Report of 4H-SiC epitaxial wafer task force_20240122

5.2 *Silicon Carbide Substrate Task Force*

Min Lu (Perfecr 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 for Residual Stress of Silicon Carbide Wafers by Photoelastic
- Specific Work
  - Aug ,2023, Online task force meeting, comparison test work arrangement
  - Aug, 2023- now, Comparison test work,finished
  - Jan. 10, 2024, Online TF meeting

Attachment: 9 SEMI China CS Std. Technical Committee Silicon Carbide substrate Task Force 202401 25

6 Old Business

6.1 *Refer to Table 12 Previous Meeting Action Items*

7 New Business

7.1 *Requests for ballots in Cycle 2 or 3 of 2024*

7.1.1 Doc. 6769, New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic

Motion: Approve Document 6769 for Letter Ballot in Cycle 2-24 or Cycle 3-24.
By / 2nd: Min LU (Perfect Crystal) / Heng Zhang (Jing’an)
Discussion: Yang GAN (HIT): Are these test results comparable?
Min LU (Perfect Crystal): Yes.
Vote: 20 in favor. (Total 22 companies. 2 companies abstain.) Motion passed.

7.2 *Abolish SNARF*

7.2.1 Doc. 6768, New Standard: Test Method for Micropipe Density of Silicon Carbide Wafer by Laser Reflection

Motion: Approve abolish SNARF Document 6768
By / 2nd: Min LU (Perfect Crystal) / Heng Zhang (Jing’an)
Discussion: None
Vote: 22 in favor. (Total 22 companies. 0 companies abstain.) Motion passed.

7.3 SNARF(s) Granted a One-Year Extension

7.3.1 Doc. 6767, New Standard: Test Method for GBIR, SBIR, GF3R, SFQR and SORI of Silicon Carbide Wafers by Oblique Incident Interference Method

Motion: Approve a one year extension of SNARF Document 6767
By / 2nd: Min LU (Perfect Crystal) / Shunfeng Li (Everbright)
Discussion: None
Vote: 22 in favor. (Total 22 companies. 0 companies abstain.) Motion passed.

7.3.2 Doc. 6769, New Standard: Test Method for Residual Stress of Silicon Carbide Wafers by Photoelastic

Motion: Approve a one year extension of SNARF Document 6769
By / 2nd: Min LU (Perfect Crystal) / Yang Gan (HIT)
Discussion: None
Vote: 20 in favor. (Total 22 companies. 2 companies abstain.) Motion passed.

7.4 *Five-Year-Review*

- None

8 Next Meeting and Adjournment

The next meeting of the Compound Semiconductor Materials & HB-LED China TC Chapter is scheduled for TBD, 2024 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	2024/2/6
Guoyou Liu (CRRC TIMES), Compound Semiconductor Materials Committee and HB-LED Committee China TC Chapter Co-chair	2024/2/7

Table 13 Index of Available Attachments#1

Title	*Title*
1 Chinese SEMI Standard Meeting Reminders	2 Compound&HB-LED TC Winter Meeting 2023 Agenda
3 China CSM&HB-LED TC Joint Spring Meeting Minutes 20230426	4 SEMI Staff Report
5 NA CSM TC Chapter Liaison report Nov 2022 v1	6 CSM EU TC Chapter Dec 2023
7 JA CSM Liaison Report Jan 2024 v1.0	8 Report of 4H-SiC epitaxial wafer task force_20240122
9 SEMI China CS Std. Technical Committee Silicon Carbide substrate Task Force 202401 25	

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