



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

China Fall Standards Meeting 2020

September 28<sup>th</sup>, 2020, 13:30-17:00

Grand New Century Hotel, No.188 Futian Road, Yiwu, Zhejiang, China.

**TC Chapter Announcements**

*Next TC Chapter Meeting*

China Spring Standards Meeting 2021

TBD, 2021

**Table 1 Meeting Attendees**

*Italics indicate virtual participants*

**Co-Chairs:** Guoyou Liu (CRRc TIMES), Jiangbo Wang (HC SEMITEK)

**SEMI Staff:** Daniel Qi – SEMI China, Isadora Jin – SEMI China, Ein Wu (SEMI China)

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
HC SEMITEK	Wang	Jiangbo	GHTOT	Zhang	Gonglei
SMTC	Wu	Liangwen	JINGAN	Zhang	Heng
Monocrystal	Niu	Chongshi	JNIGAN	Si	Fanghu
CRRc TIMES	Liu	Guoyou	Fujian Beidian	Zhang	Jie
AK OPTICS	Ma	Tiezhong	Dynax	Qian	Hongtu
Epiworld	Feng	Gan	HIT	Gan	Yang
Epiworld	Chen	Zhixia	BST	Liu	Jianzhe
TIANLI	Wei	Mingde	CRRc Semiconductors	Li	Chengzhan
Innoscence	Liu	Zhibin	Enkris Semiconductor	Chen	Yuchao
NATA	Chen	Huabing	Xinguan Technology	Cheng	Wanxi
NATA	Wang	Ping	GUSULAB	Li	Shunfeng
NATA	Du	Peiwen	CETC13	Sun	Niefeng
NATA	Chen	Fang	NAURA	Wang	Xiangang
NATA	Li	Xiaoping	NAURA	Dong	Boyu
NATA	Yang	Ming	NAURA	Zhang	Yu
AMEC	Guo	Shiping	NAURA	Li	Lin
AMEC	Ji	Hua	NAURA	Chen	Xing
AMEC	Cao	Han	NAURA	Wang	Yarong
AMEC	Zhu	Qiulong	BUPT	Tang	Weihua
AMEC	Liu	Yingbin	GCL	Hu	Dongli
AMEC	Tian	Ye	CFLD	Qing	Yun



<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Huatai United Securities	Tian	Lai	Beijing TSD	Liu	Yongfeng
Huatai United Securities	Liu	Jiayu	Beijing TSD	Liang	Hao
Huatai United Securities	Wang	Lei	TEL	Zhang	Xiaoxu
Huatai United Securities	Huang	Jiangqiang	3M	Yu	Tao
MigeLab	Zhu	Zhen	GTAT	Zhou	Zhenxing
MigeLab	Wang	Feifei	Kepeida	Qian	Hu
China Crystal	Li	Shara	Schunk	Gong	Haoyu
China Crystal	Song	Sherrie	Schunk Xycarb	Xu	Xiaobo
Vitalchem	Zhou	Tiejun	Schunk Xycarb	Zhao	Neil
Vitalchem	Guo	Chao	Aixtron	Fang	Ziwen
Vitalchem	Ye	Wucui	Aixtron	Chen	Wei
Vitalchem	Gan	Ronghua	SINOPATT	Lu	Qianjun
YX-LAB	Huang	Hongjia	SINOPATT	Gao	Nie
Huaqiao University	Hu	Zhongwei	ENSHI ZHICHUN	Chu	Fangwei
Doesun Energy	Sun	Minta	CGEE	Fang	Zhiping
EUROTHERM	Wang	Ruirui	Darkuan	Zhou	Man
Next Equip	Wu	Jianhua	Nanjing Invest Gov	Zhao	Shu
SDWEIJI	Xu	Chunliang	Silicology	Miao	Zhi
SDWEIJI	He	Cailong	Simbba	Song	Weihong
SDWEIJI	Wang	Guoqing	Chemweekly	Zhao	Can
WINS	Zhang	Shengtao	Staubli	Zhou	Chao
WINS	Fan	Guofeng	JDHPURITY	Li	Xiaogang
TDG	Lu	Yarong	Hermes	Li	Qi
KUREHA	Huang	Zhijian	Sdic Fund	Zhao	Zhiyong
Cimetrix	Liu	Bo	Air Liquide	Yu	Yunhong
Cimetrix	Huang	Yufeng	Air Liquide	Xiao	Yanping
Crystal Optech	Wu	Zhenxiao	JSFIC	Zhao	Lun
Crystal Optech	Chen	Zhengang	Helios	Li	Jiayang
CECSIC	Pan	Yaobo	CETC55	Tian	Feifei
Gemue	Wang	Shuguang	Synlight	Cui	Jingguang

**Table 2 Leadership Changes**

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
<i>Compound Semiconductor Materials</i>		
SiC Epitaxial Wafer Task Force		Gan FENG (Epiworld International Co., LTD)
Silicon Carbide Substrate Task Force		Min LU (IAWBS) Hongjun ZHENG (Beijing sanping technology co., LTD) Fangliang YAN (Mige Lab)
<i>HB-LED</i>		
None		

**Table 3 Committee Structure Changes**

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
<i>Compound Semiconductor Materials</i>	
None	SiC Epitaxial Wafer Task Force
None	Silicon Carbide Substrate Task Force
<i>HB-LED</i>	
GaN based LBD Epitaxial Wafer Task Force	Inactive
Sapphire Single Crystal Ingot Task Force	Inactive
Single Crystal Sapphire Task Force	Inactive

**Table 4 Ballot Results**

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
<i>Compound Semiconductor Materials</i>		
None		
<i>HB-LED</i>		
6502	Line Item Revision to SEMI HB 11, Specification for Sapphire Single Crystal Ingot Intended for Use for Manufacturing HB-LED Wafers	<b>Passed</b> as balloted
6371B	Test Method for Determining Geometrical Parameters of Patterns on Patterned Sapphire Substrate	<b>Failed</b> and return to TF for re-work and rebalot.

#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**

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
<i>Compound Semiconductor Materials</i>			
	SNARF	SiC Epitaxial Wafer TF	4H-SiC Homo-Epitaxial Wafer Specification
<i>HB-LED</i>			
None			

**Table 6 Authorized Activities**

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

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
<i>Compound Semiconductor Materials</i>			
	SNARF	SiC Epitaxial Wafer TF	4H-SiC Homo-Epitaxial Wafer Specification
<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>			
6589	Cycle 9-20 or Cycle 1-21	HB-LED Equipment Communication Interface TF	Major Revision to SEMI HB4-0913 (Reapproved 0419) Specification of Communication Interfaces for High Brightness Led Manufacturing Equipment (HB-LED ECI)

**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>		
5629	Single Crystal Sapphire TF	Guide for Identification Defects on Bare Surfaces of Sapphire Wafers

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

Standard Designation	Title
<i>Compound Semiconductor Materials</i>	
None	
<i>HB-LED</i>	
None	

**Table 11 New Action Items**

Item #	Assigned to	Details
<i>Compound Semiconductor Materials</i>		
	SiC Substrate TF	Do more investigation on SiC Substrate
<i>HB-LED</i>		
None		

**Table 12 Previous Meeting Action Items**

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

**Table 12 Previous Meeting Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
<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. SEMI Staff called the meeting to order at 13:30 PM. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed.

Agenda was reviewed.

**Attachment:** 1 Chinese SEMI Standard Meeting Reminders

### 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>:** Liangwen Wu (SMTC) / Gonglei Zhang (GHTOT)

**Discussion:** None

**Vote:** 37Y - 0 N, (Total 37 companies.) Motion Passed.

**Attachment:** 3-1 China HB-LED Fall Meeting Minutes 20190927

3-2 China CSM Meeting Minutes 20190926

### 3 Liaison Reports

#### 3.1 Compound Semiconductor Materials North America TC Chapter

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

**Action Item:** Next meeting –TBD

- The Co-chair of North America Compound Semiconductor Materials TC is Russ Kremer (Freiberger Compound Materials) and Jim Oliver (Northrop Grumman).
- Ballot Results
  - None
- Task Force Updates
  - Silicon Carbide TF
    - liaison with Europe TC Chapter
- Abolished SNARF(s)
  - None
- 5 year review
  - M86-0915 Specification for Polished Monocrystalline C-Plane Gallium Nitride Wafers
    - Discussion for possible revision to specs for 3" and 4" wafer size
- Other Interested Task Force

- 5 year review TF under the Traceability NA TC Chapter
  - Issued ballot 6604, Line Item Revision to SEMI T5-1214: Specification for Alphanumeric Marking of Round Compound Semiconductor Wafers
    - To include 200 mm wafer for Silicon Carbide
  - Ballot adjudication pending

**Attachment:** 5 CSM NA TC Liaison report 08142020

### 3.2 Compound Semiconductor Materials Europe TC Chapter

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

**Action Item:** Next meeting –SEMICON Europa. Munich Germany, November 10-13, 2020

- The Co-chair of Europe Compound Semiconductor Materials TC is Arnd Weber (SiCrystal).
- Authorized Activities
  - Drafting Doc. 6615, Revision of M55-0817 Specification for Polished Monocrystalline Silicon Carbide Wafers is published.
    - To include 200 mm wafer for Silicon Carbide
  - New Standard: Test Method For Contactless Resistivity Measurement Of Semi-insulating Semiconductors
    - Approved and published as SEMI M87-0116
- Ballot Results
  - Doc. 6474, Revision to SEMI M82-0813: Test Method for the Carbon Acceptor Concentration in Semi-Insulating Gallium Arsenide Single Crystals by Infrared Absorption Spectroscopy. **Passed** as balloted.
  - Doc. 6546, Revision to SEMI M83-0913: Test Method For Determination Of Dislocation Etch Pit Density In Monocrystals Of III-V Compound Semiconductors. **Passed** as balloted.
- Authorized Ballot
  - None
- Abolished SNARF(s)
  - None
- 5 year review
  - None

**Attachment:** 6 EU CSM TC Chapter Liaison report August 2020 v1

### 3.3 Compound Semiconductor Materials Japan TC Chapter

- None

### 3.4 Compound Semiconductor Materials Taiwan TC Chapter

- None

### 3.5 SEMI Staff Report



Isadora Jin (SEMI) gave the SEMI Staff Report. Of note:

**Action Item:**

- SEMI International Standards Overview
- 2020 Critical Dates for SEMI Standards Ballots
- A&R SC Membership Update
- NARSC Members
- Organization Chart for China HB-LED Committee
- Organization Chart for Global Compound Semiconductor Materials Committee
- SNARF Abolished
- Inactive Task Force
- EHS Information

**Motion:** Zhehua Yan (AURORA) moved that the committee approve 5629 to be abolished.

**By / 2<sup>nd</sup>:** Zhehua Yan (AURORA)/Min Lu (IAWBS)

**Discussion:** None

**Vote:** 32Y - 0 N, (Total 37 companies.) Motion Passed.

**Attachment:** 4 SEMI Staff Report 20200928

#### 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 6371B, New Standard: Test Method for Determining Geometrical Parameters of Patterns on Patterned Sapphire Substrate

**Motion:** Jianzhe Liu (BST) moved that this Document return to the Task Force for rework.

**By / 2<sup>nd</sup>:** Jianzhe Liu (BST) / Yang Gan (HIT)

**Discussion:** Tiezhong Ma (AK OPTICS): Different test methods with different kinds of light. "Power" is more useful to describe than "energy".

Yang Gan (HIT): There is no detail about this test method.

Jiangbo Wang (HC SEMITEK): Whether the description is not clear? This is not a Method but a kind of pattern. Method should be a particular scientific way of doing sth.

Shunfeng Li (GUSULAB): Agree with the description is more like a pattern. No big difference ambiguity in Chinese, but means different things in English.

Min Lu (IAWBS): The figure just show the position for test, it just a diagrammatic sketch of test position. As a test method, it is not clear and specific enough.

Jiangbo Wang (HC SEMITEK): The committee proposes that accept this comment.

Jianzhe Liu (BST): Inch and millimeter were used in the two SEMI standards.

Min Lu (IAWBS): The text should show the related document information.

Gan Feng (Epiworld): We say 4-inch, 6-inch for communication, but the specification unit of a wafer is in millimeters.

**Vote:** 31 in favor and 0 opposed. (Total 37 companies. 0 companies abstain.)

**Attachment:** 9 200928\_6371B



4.2 Document 6502, Line Item Revision to SEMI HB11-0819: Specification for Sapphire Single Crystal Ingot Intended for Use for Manufacturing HB-LED Wafers

**Motion:** Zhehua Yan (AURORA) moved that this document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review.

**By / 2<sup>nd</sup>:** Zhehua Yan (AURORA) / Liangwen Wu (SMTC)

**Discussion:** None

**Vote:** 37 in favor and 0 opposed. (Total 37 companies.) Motion Passed as balloted.

**Attachment:** 10 Ballot report 6502

## 5 Subcommittee and Task Force Reports

### 5.1 Pattern Sapphire Substrate Task Force

Jianzhe Liu (BST) reported for Pattern Sapphire Substrate Task Force. This report contained information on:

**Action Item:**

- Introduced the task force's leaders and members.
- Working on
  - Doc 6371B, New Standard: Test Method for Determining Geometrical Parameters of Patterns on Patterned Sapphire Substrate

**Attachment:** 7 SEMI HB-LED PSS Task Force Report 20200928

### 5.2 HB-LED Equipment Communication Interface Task Force

Ye Tian (AMEC) reported for the HB-LED Equipment Communication Interface Task Force. This report contained information on:

**Action Item:**

- Introduced the task force's leaders and members.
- Documents in work:
  - Doc. 6589, Revision to SEMI HB4-0913 (Reapproved 0419) Specification of Communication Interfaces for High Brightness Led Manufacturing Equipment (HB-LED ECI)

**Attachment:** 8 SEMI HB-LED CommunicationTF\_Report

## 6 Old Business

6.1 Refer to Table 12 Previous Meeting Action Items

## 7 New Business

7.1 Requests for ballots in Cycle 9-2020 or Cycle 1-2021

7.1.1 Doc. 6589, Major Revision to SEMI HB4-0913 (Reapproved 0419) Specification of Communication Interfaces for High Brightness Led Manufacturing Equipment (HB-LED ECI)

**Motion:** Han Cao (AMEC) moved that the committee approve Document 6589 for Letter Ballot in Cycle 9-2020 or Cycle 1-2021.

**By / 2<sup>nd</sup>:** Han Cao (AMEC) / Mingde Wei (TIANLI)

**Discussion:** None





**Vote:** 28 in favor and 0 opposed. (Total 35 companies. 7 companies abstain.) Motion Passed as balloted.

**Attachment:** 11 SEMI\_Doc 6589\_Ballot\_Report

## 7.2 *New TFOFs*

### 7.2.1 New Task Force: SiC Epitaxial Wafer Task Force

**Motion:** Gan Feng (Epiworld) moved the Committee to approve the new task force: SiC Epitaxial Wafer Task Force.

**By / 2<sup>nd</sup>:** Gan Feng (Epiworld) / Yang Gan (HIT)

**Discussion:** None

**Vote:** 34 in favor and 0 opposed. (Total 34 companies.) Motion Passed.

**Attachment:** 12 SEMI\_SiC Epitaxial Wafer Task Force SiC 外延片工作组

### 7.2.2 New Task Force: Silicon Carbide Substrate Task Force

**Motion:** Min Lu (IAWBS) moved the Committee to approve the new task force: Silicon Carbide Substrate Task Force.

**By / 2<sup>nd</sup>:** Min Lu (IAWBS) / Gan Feng (Epiworld)

**Discussion:** None

**Vote:** 34 in favor and 0 opposed. (Total 34 companies.) Motion Passed.

**Attachment:** 14 SEMI\_Silicon carbide substrate Task Force\_Report 碳化硅衬底工作组

## 7.3 *New SNARFs*

### 7.3.1 SNARF, New Activity: 4H-SiC Homo-Epitaxial Wafer Specification

**Motion:** Gan Feng (Epiworld) moved that the committee approve the the new activity: 4H-SiC Homo-Epitaxial Wafer Specification

**By / 2<sup>nd</sup>:** Gan Feng (Epiworld) / Min Lu (IAWBS)

**Discussion:** None

**Vote:** 32 in favor and 0 opposed. (Total 32 companies.) Motion passed.

**Attachment:** 13 SNARF\_4H-SiC homo-epitaxial wafer Specification

### 7.3.2 SNARF, New Activity: Nondestructive Test Method for Micropipe Density of Polished Monocrystalline Silicon Carbide Wafer

**Motion:** Min Lu (IAWBS) moved that the committee approve the the new activity: Nondestructive Test Method for Micropipe Density of Polished Monocrystalline Silicon Carbide Wafer

**By / 2<sup>nd</sup>:** Min Lu (IAWBS) /

**Discussion:** Yang Gan (HIT): Whether the word “Nondestructive” is suitable or not?

Yang Gan (HIT): It is better to do more investigation on substrate.

**Vote:** 6 in favor and 26 opposed. (Total 32 companies.) Motion failed.

**Attachment:** 15 SNARF-Nondestructive Method for Micropipe Density of Polished Monocrystalline Silicon Carbide Wafer-rev

## 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, 2021 in China.

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

Adjournment: 17:30.

Respectfully submitted by:

Isadora Jin

Standards, Senior Specialist

SEMI China

Phone: 86-21-60278578

Email: [ijin@semi.org](mailto:ijin@semi.org)

Minutes tentatively approved by:

Jiangbo Wang (HC SEMITEK), Compound Semiconductor Materials Committee and HB-LED Committee China TC Chapter Co-chair	<2020/10/14>
Guoyou Liu (CRRC TIMES), Compound Semiconductor Materials Committee and HB-LED Committee China TC Chapter Co-chair	<2020/10/14>

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

<i>Title</i>	<i>Title</i>
1 Chinese SEMI Standard Meeting Reminders	2 Compound&HB-LED TC Fall Meeting 2020 Agenda
3-1 China HB-LED Fall Meeting Minutes 20190927	3-2 China CSM Meeting Minutes 20190926
4 SEMI Staff Report 20200928	5 CSM NA TC Liaison report 08142020
6 EU CSM TC Chapter Liaison report August 2020 v1	7 SEMI HB-LED PSS Task Force Report 20200928
8 SEMI HB-LED CommunicationTF_Report	9 200928_6371B
10 Ballot report 6502	11 SEMI_Doc 6589_Ballot_Report
12 SEMI_SiC Epitaxial Wafer Task Force SiC 外延片工作组	13 SNARF_4H-SiC homo-epitaxial wafer Specification
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#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.