PV Materials NA TC Chapter
Meeting Summary and Minutes
Intersolar North America
Wednesday, July 13, 2016, 11:00 AM - 12:00 Noon
San Francisco Marriott Marquis, San Francisco, California

TC Chapter Announcements

Next TC Chapter Meeting
Wednesday, November 9, 2016 (11:00 AM-Noon) San Jose, CA in conjunction with the NA Fall Standards Meeting 2016. Check www.semi.org/en/standards for the latest update.

Table 1 Meeting Attendees

Co-Chairs: Hugh Gotts (Air Liquide)

SEMI Staff: Kevin Nguyen (SEMI HQ) Chie Yanagisawa (SEMI Japan)

<table>
<thead>
<tr>
<th>Company</th>
<th>Last</th>
<th>First</th>
<th>Company</th>
<th>Last</th>
<th>First</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonoscan</td>
<td>Martell</td>
<td>Steve</td>
<td>Sinton Instruments</td>
<td>Sinton</td>
<td>Ron</td>
</tr>
<tr>
<td>Self</td>
<td>Wagner</td>
<td>Peter</td>
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</tbody>
</table>

Table 2 Task Force or Leadership Changes

<table>
<thead>
<tr>
<th>Group</th>
<th>Previous Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>International PV Analytical Test Methods, Metrology, and Inspection Task Force</td>
<td>Ron Sinton (Sinton Instruments) stepped down.</td>
</tr>
<tr>
<td>PV Materials NA TC Chapter</td>
<td>John Valley (SSL) stepped down via email request.</td>
</tr>
</tbody>
</table>

Table 3 Ballot Results

**Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

**Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting.

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5960A</td>
<td>Revision of SEMI PV21-1011 Guide for Silane (SiH4), Used in Photovoltaic Applications</td>
<td>Passed superclean</td>
</tr>
<tr>
<td>5961A</td>
<td>Revision of SEMI PV24-1011 Guide for Ammonia (NH3) in Cylinders, Used in Photovoltaic Applications</td>
<td>Passed superclean</td>
</tr>
<tr>
<td>5962A</td>
<td>Revision of SEMI PV26-1011 Guide for Hydrogen Selenide (H2Se) in Cylinders, Used in Photovoltaic Applications</td>
<td>Passed as balloted</td>
</tr>
</tbody>
</table>

Table 4 Authorized Activities

None

NOTE 1: SNARFs and TFOFs are available for review on the SEMI Web site at: [http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF](http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF)
Table 5 Authorized Ballots

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6039</td>
<td>Cycle 6-16</td>
<td>International PV Analytical Test Methods, Metrology, and Inspection Task Force</td>
<td>Reapproval of SEMI PV31-0212 Test Method For Spectrally Resolved Reflective And Transmissive Haze Of Transparent Conducting Oxide (TCO) Films For PV Application</td>
</tr>
</tbody>
</table>

Table 6 New Action Items
None

Table 7 Previous Meeting Action Items
None

1 Welcome, Reminders, and Introductions
Hugh Gotts called the meeting to order at 11:00 AM. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

2 Review of Previous Meeting Minutes
The TC Chapter reviewed the minutes of the previous meeting.

Motion: Accept the minutes as written
By / 2nd: Ron Sinton/Peter Wagner
Discussion: None
Vote: 3-0

3 Liaison Reports
3.1 PV Materials Europe TC Chapter
Peter Wagner reported for the Europe TC Chapter. Of note:
- Doc 5889, New Standard: Test Method On Cell Level For Potential-Induced Degradation Susceptibility Of Solar Cells And Module Encapsulation Materials – Passed with editorial changes

Attachment: 01, EU liaison report 20160712

3.2 PV and PV Materials Joint Japan TC Chapters
Chie Yanagisawa reported for the Japan TC Chapter.

Attachment: 02, 160630_LiaisonReport_JA_PV&PVM_v1.0
3.3 PV Taiwan TC Chapter

Kevin Nguyen reported for the Taiwan TC Chapter. Of note:

- Doc #5598, New Standard: Test Method for Durability of Low Light Intensity Organic Photovoltaic (OPV) and Dye Sensitized Solar Cell (DSSC) will be reviewed at the next meeting.
- SNARF for 2 weeks review “New Standard: Test Method for Polymer Foil dependent Discoloration of Silver Fingers on PV modules”

**Attachment:** 03, Taiwan PV Standard Committee Liaison Report July 2016

3.4 PV China TC Chapter

Kevin Nguyen reported for the China TC Chapter. Of note:

- 2 new SNARFs:
- 3 ballots failed committee review, and return to TF, TF planning to merge the 3 SNARFs to one in next chapter meeting
  - PV Module TF: Doc 5830, New Standard: Classification for Electroluminescence Inspection of Crystalline Silicon Photovoltaic Modules
- 1 ballot passed committee review:
  - PV Silicon Wafer TF: Doc 5927, Revision of SEMI PV22-1011, Specification for Silicon Wafers for Use in Photovoltaic Solar Cells
- Authorized 2 ballots in Cycle 4- 2016
  - Doc 5841, New Standard: Guide for Specifying Low Pressure Horizontal Diffusion Furnace
- 2 new standards published:
  - SEMI PV 73-0216, Test Method for Thin-film Silicon PV Modules Light Soaking
  - SEMI PV 74-0216, Test Method for the Measurement of Chlorine in Silicon by Ion Chromatography

**Attachment:** 04, China Photovoltaic Committee Chapter Liaison Report20160322

3.5 SEMI Staff Report

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

- Next meetings
  - November 7-10, 2016
    - SEMI HQ in San Jose, California
  - April 3-6, 2017
    - SEMI HQ in San Jose, California
  - July 10-13, 2017
2016 Critical Dates for SEMI Standards Ballots

- **Cycle 6**
  - Ballot submission deadline: July 22
  - Voting opens: August 1
  - Voting closes: Sept 1
- **Cycle 7**
  - Ballot submission deadline: Aug 17
  - Voting opens: August 31
  - Voting closes: Sept 30

SEMI Standards Publications

- Total SEMI Standards in portfolio: 964
  - Includes 141 Inactive Standards

**Attachment:** 05, Staff Report June 2016 PV materials

### 4 Ballot Review

**Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review. **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting.

**NOTE 2:** 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 5960A, Revision of SEMI PV21-1011 Guide for Silane (SiH4), Used in Photovoltaic Applications

4.1.1 It passed as balloted.

**Attachment:** 06, 5960A_Procedural Review

#### 4.2 Document 5961A, Revision of SEMI PV24-1011 Guide for Ammonia (NH3) in Cylinders, Used in Photovoltaic Applications.

4.2.1 It passed as balloted.

**Attachment:** 07, 5961A_Procedural Review

#### 4.3 Document Doc. 5962A, Revision of SEMI PV26-1011 Guide for Hydrogen Selenide (H2Se) in Cylinders, Used in Photovoltaic Applications

4.3.1 It passed as balloted.

**Attachment:** 08, 5962A_Procedural Review

### 5 Subcommittee and Task Force Reports

5.1 Int’l PV Analytical Test Methods, Metrology, and Inspection TF

Hugh Gotts reported for the Task Force. Of note:

- Old business

**Motion:** To submit doc. 5959A for cycle 6

**By / 2nd:** Ron Sinton/Peter Wager

**Discussion:** None

**Vote:** 3-0

- New business
  - Ron Sinton is resigning as co-chairman of the task force.
  - Review of Table 1 in liquid and gaseous chemicals such as SEMI PV24-1011 to address/remove US units and review all items for appropriate units

**Attachment:** 09, 2016 Summer NA PV Standards Analytical TF agenda Rev 2

### 6 Old Business
None

### 7 New Business

#### 7.1 Future meeting

Hugh Gotts addressed the committee on this topic of the decline in standards activities. He proposed that this committee be met once a year. After discussion, it appears that SEMICON West would be an ideal time for the committee to meet.

### 8 Next Meeting and Adjournment

The next meeting is scheduled for Wednesday, November 9, 2016 the NA Fall Standards meetings at SEMI HQ in San Jose, CA. See [http://www.semi.org/en/events](http://www.semi.org/en/events) for the current list of meeting schedules.

Having no further business, a motion was made to adjourn. Adjournment was at 12:00 PM.

Respectfully submitted by:

Kevin Nguyen,
SEMI Standards Operations Manager
Phone: 408-943-7997
Email: knguyen@semi.org

Minutes approved by:

<table>
<thead>
<tr>
<th>Hughes Gotts (Air Liquide)</th>
<th>&lt;Date approved&gt;</th>
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<tbody>
<tr>
<td>&lt;Name&gt; (&lt;Company&gt;), Co-chair</td>
<td>&lt;Date approved&gt;</td>
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<tr>
<td>Title</td>
<td>Title</td>
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<td>160630_LiaisonReport_JA_PV&amp;PVM_v1.0</td>
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<tr>
<td>Taiwan PV Standard Committee Liaison Report July 2016</td>
<td>5962A_Procedural Review</td>
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<tr>
<td>China Photovoltaic Committee Chapter Liaison Report20160322</td>
<td>2016 Summer NA PV Standards Analytical TF agenda Rev 2</td>
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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. For additional information or to obtain individual attachments, please contact [SEMI Staff Name] at the contact information above.