Meeting Summary and Minutes

NA Standards Spring 2018 Meetings
Tuesday, April 10, 15:00 – 17:00
SEMI Headquarters, Milpitas, California

TC Chapter Announcements

Next TC Chapter Meeting
SEMICON West 2018 Standards Meetings
Thursday, July 12, 10:30 – 12:00
Marriott Marquis, San Francisco, California

Table 1 Meeting Attendees

*Italics* indicate virtual participants

<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>Asahi Glass</td>
<td>Satou</td>
<td>Youichirou</td>
<td>NIST</td>
<td>Allen</td>
<td>Richard</td>
</tr>
<tr>
<td>Asahi Glass</td>
<td>Takahashi</td>
<td>Mark</td>
<td>ProPrincipia</td>
<td>Draper</td>
<td>Don</td>
</tr>
<tr>
<td>Corning</td>
<td>Schmidt</td>
<td>Ilona</td>
<td>Sonoscan</td>
<td>Martell</td>
<td>Steve</td>
</tr>
<tr>
<td>Covalent Metrology</td>
<td>Moore</td>
<td>Chris</td>
<td>SuperSight</td>
<td>Perroots</td>
<td>Len</td>
</tr>
<tr>
<td>Eda 2Asic Consulting</td>
<td>Reiter</td>
<td>Herb</td>
<td>SEMI</td>
<td>Nguyen</td>
<td>Laura</td>
</tr>
</tbody>
</table>

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

None

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

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
</table>
– TC Member Review took place between 12/20/2017 and 01/03/2018 before approval by GCS on 01/11/2018 |
Table 6 Authorized Activities
Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
</table>
-- TC Member Review took place between 12/20/2017 and 01/03/2018 before approval by GCS on 01/11/2018 |
| 6075 | SNARF  | 3DP&I Bonded Wafer Stacks | New Standard, Guide for Describing Glass and Quartz Based Material for Use in 3DS-IC Process  
-- Revision to SNARF title and scope. TC Member Review took place between 03/13/2018 and 03/26/2018 |
| 6389 | SNARF  | NA 3DP&I Committee | Reapproval of SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames                                                                                                      |
| 6390 | SNARF  | NA 3DP&I Committee | Reapproval of SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures                                                                 |

#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

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>TF</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6389</td>
<td>Cycle 4-2018</td>
<td>NA 3DP&amp;I Committee</td>
<td>Reapproval of SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames</td>
</tr>
<tr>
<td>6390</td>
<td>Cycle 4-2018</td>
<td>NA 3DP&amp;I Committee</td>
<td>Reapproval of SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures</td>
</tr>
</tbody>
</table>

Table 8 SNARF(s) Granted a One-Year Extension
None

Table 9 SNARF(s) Abolished

<table>
<thead>
<tr>
<th>#</th>
<th>TF</th>
<th>Title</th>
</tr>
</thead>
</table>
| 5173 | 3DP&I Bonded Wafer Stacks | New Standard, Guide for Describing Silicon Wafers for Use in a 300 mm 3DS-IC Wafer Stack  
-- No industry push, Activity discontinued |

Table 10 Standard(s) to receive Inactive Status
None

Table 11 New Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018April#01</td>
<td>Laura Nguyen, Rich Allen</td>
<td>Laura to send draft LI SNARF for SEMI 3D1 to Rich Allen, copy Steve Martell and Chris Moore. Include RA for 3D1 ballot results from Cycle 4-2017 in email.</td>
</tr>
</tbody>
</table>
Table 12 Previous Meeting Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017April#03</td>
<td>Rich Allen</td>
<td>To contact Victor Vartanian (not at this time) and David Read (no) to see if they are still interesting of being TF leader. Closed.</td>
</tr>
</tbody>
</table>

1 Welcome, Reminders, and Introductions

Richard Allen (NIST) called the meeting to order at 15:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meeting Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion: To accept the previous meeting minutes with revisions as amended.
By / 2nd: Steve Martell (Sonoscan) / Mark Takahashi (Asahi Glass)
Discussion: None.
Vote: 4-0 in favor. Motion passed.

Attachment: [2017Fall] 3DP&I NA Minutes FINAL_atm

3 Liaison Reports

3.1 3D Packaging & Integration Japan TC Chapter

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

Leadership
  • Committee Co-Chairs
    o To JRSC
      ▪ 1st Chair person, Kazunori Kato (AiT)
      ▪ 2nd Chair person, Haruo Shimamoto (AIST)
      ▪ 3rd Chair person, Masahiro Tsuriya (iNEMI)
    o GCS
      ▪ 1st GCS member, Kazunori Kato (AiT)
      ▪ 2nd GCS member, Masahiro Tsuriya (iNEMI)

Current Organization Chart of Japan TC Chapter [See attachment for Org Chart]

Meeting Information
  • Last meeting
    o Monday, February 5, 2018 at Japan Winter 2018 Meetings
    o SEMI Japan office, Tokyo
  • Next meeting
    o Monday, May 21, 2018 at Japan Spring 2018 Meetings
    o SEMI Japan office, Tokyo
Authorized Activities

<table>
<thead>
<tr>
<th>Doc #</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Document Title/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>TFOF</td>
<td>3D Packaging &amp; Integration 5 Year Review TF</td>
<td>The name of the task force, the charter, and the scope are revised due to the integration of the two global technical committees.</td>
</tr>
<tr>
<td>6352</td>
<td>SNARF</td>
<td>3D Packaging &amp; Integration 5 Year Review TF</td>
<td>Line Item Revision to SEMI G64-96 (Reapproved 0811) “Specification for Full-Plated Integrated Circuit Leadframes (Au, Ag, Cu, Ni, Pd/Ni, Pd)”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Authorized new SNARF</td>
</tr>
<tr>
<td>6353</td>
<td>SNARF</td>
<td>3D Packaging &amp; Integration 5 Year Review TF</td>
<td>Reapproval of SEMI G94-0113 “Specification for Coin-Stack Type Tape Frame Shipping Container for 300 mm Wafer”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Authorized new SNARF</td>
</tr>
</tbody>
</table>

Activities Approved via GCS between Meetings

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6352</td>
<td>Ballot Submission</td>
<td>3D Packaging &amp; Integration 5 Year Review TF</td>
<td>Line Item Revision to SEMI G64-96 (Reapproved 0811) “Specification for Full-Plated Integrated Circuit Leadframes (Au, Ag, Cu, Ni, Pd/Ni, Pd)”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Approved and authorized for ballot voting Cycle 3-2018 by GCS on 03/09/2018</td>
</tr>
<tr>
<td>6353</td>
<td>Ballot Submission</td>
<td>3D Packaging &amp; Integration 5 Year Review TF</td>
<td>Reapproval of SEMI G94-0113 “Specification for Coin-Stack Type Tape Frame Shipping Container for 300 mm Wafer”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Approved and authorized for ballot voting Cycle 3-2018 by GCS on 03/09/2018</td>
</tr>
</tbody>
</table>

Task Force/Study Group Highlights

- Thin Chip Handling TF
  - #5836: New Standard: Test Method for Adhesive Strength for Adhesive Tray Used for Thin Chip Handling
    - Ballot to be drafted

- 3D Packaging & Integration 5 Year Review TF
  - TF name/charte/scope are revised due to the integration of the two committees. Details are in the next slide.
  - TC Chapter authorized the following new SNARFs
  - GCS authorized the following documents to ballot in Cycle 3-2018
    - #6352: Line Item Revision to SEMI G64-96 (Reapproved 0811) “Specification for Full-Plated Integrated Circuit Leadframes (Au, Ag, Cu, Ni, Pd/Ni, Pd)”
    - #6353: Reapproval of SEMI G94-0113 “Specification for Coin-Stack Type Tape Frame Shipping Container for 300 mm Wafer”
  - TF Name/charte/scope are revised due to the integration of the two committees.

Charter

1. The TF reviews the SEMI published standard documents under the Assembly & Packaging 3D Packaging & Integration Technical Committee, which require 5 years reviews per SEMI requirement. When necessary, the beginning of every year, the review, required documents are revised, updated, reviewed to categorize the revision, update, or inactive per this taskforce activity.
2. This is permanent taskforce team under Assembly & Packaging Technical Committee.

Scope

- Every year, the standard documents are listed up for required 5 years reviews. The taskforce team will lead the documents reviews, together with the experts who will be recruited for the specific standard documents contents.
  1. List up the review required standard documents for document reviews issued by old Assembly and Packaging TC, working together with SEMI Japan staff.
  2. Every year, the TF reviews the documents and take necessary actions per the basic concept for the document updates.
  3. The TF leaders and/or members are enforced or changed when additional expertise are needed for the reviews.
Steering Group
  - Leadership: Masahiro Tsuriya / iNEMI, Haruo Shimamoto / AIST, Eiji Yoshino (Hitachi High-Technologies) stepped down.
  - Discussion:
    - Technical Sharing:
      - Organic Laminate Material Technology Overview (Hitachi Chemical)
    - Panel Size TF status
    - TF Opportunities Discussion
      - Adhesion strength on molded surface Area
      - Evaluation metrology between RDL vs. other materials in PLP/WLP
      - Adhesive Tray Documentation Update
    - Open Discussion

Open SNARFs
  - 6223: SEMI G4-0302 (Reapproved 0811), Specification for Integrated Circuit Leadframe Materials Used in the Production of Stamped Leadframes
  - 6154: SEMI G10-96 (Reapproved 0811), Standard Method for Mechanical Measurement of Plastic Package Leadframes
  - 6224: SEMI G11-88 (Reapproved 0811), Recommended Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds
  - 6225: SEMI G13-88 (Reapproved 0811), Standard Test Method for Expansion Characteristics of Molding Compounds
  - 6226: SEMI G15-93 (Reapproved 0811), Standard Test Method for Differential Scanning Calorimetry of Molding Compounds
  - 6227: SEMI G24-89 (Reapproved 0811), Test Method for Measuring the Lead-to-Lead and Loading Capacitance of Package Leads
  - 6228: SEMI G25-89 (Reapproved 0811), Test Method for Measuring the Resistance of Package Leads
  - 6229: SEMI G28-0997 (Reapproved 0811) Specification for Leadframes for Plastic Molded S.O. Packages
  - 6233: SEMI G29-1296E (Reapproved 0811), Test Method for Trace Contaminants in Molding Compounds
  - 6093: SEMI G31-0997, Test Method for Determining the Abrasive Characteristics of Molding Compounds
  - 6230: SEMI G43-87 (Reapproved 0811), Test Method for Junction-to-Case Thermal Resistance Measurements of Molded Plastic Packages
  - 6094: SEMI G45-93, Recommended Practice for Flash Characteristics of Thermosetting Molding Compounds
  - 6095: SEMI G49-93, Specification for Plastic Molding Preforms
  - 6231: SEMI G51-90 (Reapproved 0811), Specification for Plastic Molded (Metric) Quad Flat Pack Leadframes
  - 6232: SEMI G55-93 (Reapproved 0811), Test Method for Measurement of Silver Plating Brightness
  - 6167: SEMI G73-0997 (Reapproved 0811), Test Method for Pull Strength for Wire Bonding
  - 6152: SEMI G93-0412, Measurement Method for Solder Sphere Size for Ball Grid Array Package

Five-Year Review
3.2 3D Packaging & Integration Taiwan TC Chapter
Laura Nguyen (SEMI) reported for the Taiwan TC Chapter. Of note:

Leadership

- Committee Co-Chairs: Wendy Chen (King Yuan Electronics), Roger Hwang (ASE), Chien-Chung Lin (ITRI)

Organizational Chart /See attachment for Figure/

Meeting Information

- Previous meeting:
  - Tuesday, September 26, 2017 at the Taiwan Fall 2017 Meetings; SEMI Taiwan office, Hsinchu
- Next meeting:
  - Thursday, May 10, 2018 at the Taiwan Summer 2018 Meetings; SEMI Taiwan office, Hsinchu

Ballot Results

<table>
<thead>
<tr>
<th>Doc #</th>
<th>Document Title</th>
<th>TC Chapter Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5800</td>
<td>New Standard: Guide for Wafer Edge Trimming for 3DS-IC Process</td>
<td>Passed, with editorial change</td>
</tr>
</tbody>
</table>

Task Force Updates

- Middle End Process TF
Doc 5800 passed Cycle 7-17 vote and wait the result of A&R procedure review.
Recruit new members from TSMC, SPIL, PTI, UTC or Amkor to attend TC meeting.

Testing TF
Discuss New SNARF “thin chip micro-crack inspection guide”.
Call for other members with on-going inspection experience to join the TF.
The TF is recruiting new members.

Five-Year Review

<table>
<thead>
<tr>
<th>Designation</th>
<th>Standard Title</th>
<th>Action By</th>
<th>Assigned to</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMI 3D6-0913</td>
<td>New Standard: Guide for CMP and Micro-bump Processes for Frontside Through Silicon Via (TSV) Integration</td>
<td>May 10, 2018</td>
<td>Middle End Process TF</td>
</tr>
<tr>
<td>SEMI 3D7-0913</td>
<td>New Standard: Guide for Alignment Mark for 3DS-IC Process</td>
<td>May 10, 2018</td>
<td>Middle End Process TF</td>
</tr>
</tbody>
</table>

Staff Contact: Dean Chang, SEMI Taiwan (dchang@semi.org)

Attachment: 180118_Taiwan_3DP&I_Liaison_v1.1_LN

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

SEMI Global 2018 Calendar of Events
- SEMICON Southeast Asia (May 8-10; Kuala Lumpur, Malaysia)
- SEMICON West (July 10-12; San Francisco, California)
- SEMICON Taiwan (September 5-7; Taipei, Taiwan)
- SEMICON Europa (November 13-16; Munich, Germany)
- SEMICON Japan (December 12-14; Tokyo, Japan)

Upcoming North America Standards Meetings
- SEMICON West 2018 (July 9-12, 2018, San Francisco, California)
- NA Standards Fall 2018 Meetings (November 5-8, 2018, SEMI HQ in Milpitas, California)
- NA Standards Spring 2019 Meetings (April 1-4, 2019 [tentative], SEMI HQ in Milpitas, California)

Letter Ballot Critical Dates for 2017 & 2018
- Cycle 3-2018: ballot submission due: March 9/Voting Period: March 23 – April 23
- Cycle 4-2018: ballot submission due: April 20/Voting Period: April 30 – May 30

Standards Publications Report

<table>
<thead>
<tr>
<th>Cycle</th>
<th>New</th>
<th>Revised</th>
<th>Reapproved</th>
<th>Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2017</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>December 2017</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>January 2018</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>February 2018</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>March 2018</td>
<td>5</td>
<td>10</td>
<td>22</td>
<td>0</td>
</tr>
</tbody>
</table>

Total in portfolio – 985 (includes 225 Inactive Standards)

Nonconforming Titles (See PM Appendix 4) *[None]*

Five-Year Review

- SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames
- SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures

SNARF 3 Year Status, TC Chapter may grant a one-year extension

- 5173: New Standard, Guide for Describing Silicon Wafers for Use in a 300 mm 3DS-IC Wafer Stack
  - SNARF was approved on 3/29/2011; One-year extension granted in Spring 2017
  - SNARF expires Spring 2018
- 5976: New Standard, Terminology for 3DS-IC Technology
  - SNARF expires Fall 2018

SNARF(s) Approved by GCS in between TC Chapter Meetings

- Revision to SNARF 6075: New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process
  - SNARF approved via GCS, January 11, 2018
    - Revision to SNARF 6332; Modified title

In-progress/Needs Action

- SEMI 3D1, Terminology for Through Silicon via Geometrical Metrology
  - Reapproval Ballot / Cycle 4, 2017
  - Publication pending; Task Force agreed to address Accept with Comment in future Line Item Ballot

Attachment: [2018Spring] Staff Report – 3DP&I

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.

None
5 Subcommittee and Task Force Reports

5.1 3DP&I Inspection and Metrology Task Force

5.2 3DP&I Bonded Wafer Stacks Task Force

Task Force Leaders reported for both the 3DP&I Inspection and Metrology and 3DP&I Bonded Wafer Stacks Task Forces. Of note, during the task force meeting, the task force reviewed and continued working on the below draft documents. There is no new update at this time.

- 6175: New Standard, Guide on Measurements of Openings and Vias in Glass

Please contact Ilona Schmidt (Ilona.schmidt@corning.com) and Rich Allen (richard.allen@nist.gov) if you would like to participate in these activities.

5.3 Fan-Out Panel Level Packaging (FO-PLP) Panel Task Force

Richard Allen (NIST) reported for this Task Force. Of note:


Modifications were made to these areas listed below. Please look at the document and provide feedback.

- A category was added to qualify substrate type in Table 1, Section 2-1
- Sizes that members advocated seem to be majority 510 mm x 515 mm and 600 mm x 600 mm
  - A small number of members advocated for 650 mm x 650 mm
- Received a sampling plan from NCAP; added to Section 8
- More specific thickness options were added

In addition, Japan PIC Chapter is proposing a TFOF for FO-PLP Wide Panel FOUP TF.

- To be proposed at the next PI&C Japan TC Chapter meeting on April 26.
- To be proposed in response to the formation of Fan-Out Panel Level Packaging (FO-PLP) Panel Task Force under the 3D Packaging & Integration NA TC Chapter.
- TFOF to be proposed
  - Charter: This TF will focus on the development on Panel FOUP and related physical interface standards for FO-PLP utilizing existing SEMI 450mm standards.
    - The target panel size is assumed as follows;
    - Width 500~650mm x Depth 500~650mm
  - Scope: Develop the requirements for:
    - Panel FOUP
    - Equipment to Panel FOUP interfaces

Attachment: FO-PLP Panel TF Meeting_2018Apr_v3

6 Old Business

6.1 Previous Action Items

Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further old business.
6.2 Authorized Activities

6.2.1 Standards due for Five-Year Review

The committee reviewed the Standards due for Five-Year Review. The committee discussed these documents and decided to ballot for reapproval. The following actions were taken below.

Motion: Motion to authorize SEMI 3D3 and 3D5 for Reapproval Ballot in Cycle 4, 2018.

By / 2nd: Steve Martell (Sonoscan) / Mark Takahashi (Asahi Glass)

Discussion: None.

Vote: 5-0 in favor. Motion passed.

6.2.2 SNARF Three-Year Status

The committee reviewed the SNARFs three-year status list. The committee discussed these documents and the following actions were taken below.

Motion: Motion to abolish (abandon) SNARF 5173: New Standard, Guide for Describing Silicon Wafers for Use in a 300 mm 3DS-IC Wafer Stack.

By / 2nd: Steve Martell (Sonoscan) / Chris Moore (Covalent Metrology)

Discussion: None.

Vote: 6-0 in favor. Motion passed.

6.3 SEMI 3D1

Laura Nguyen informed the committee on this topic.

SEMI 3D1 was a Reapproval Ballot in Cycle 4-2017. Comments were received that would be later addressed in a Line Item Ballot. An Action Item was taken to reach out to voter(s) who made the comments and begin drafting a SNARF for revision.

Action Item: 2018April#01; Laura to send draft LI SNARF for SEMI 3D1 to Rich Allen, copy Steve Martell and Chris Moore. Include RA for 3D1 ballot results from Cycle 4-2017 in email.

Attachment: [Ballot Results] Cycle 04-17 3DS-IC_atm

7 New Business

7.1 Revision to SNARFs

7.1.1 SNARF 6075

Ilona Schmidt (Corning) addressed the committee on this topic. SNARF for 6075 was revised to clarify title and scope. Two-week TC member was sent out between 03/13/2018 and 03/26/2018 and brought to the committee for approval.

Motion: Motion to approve revision to SNARF 6075: New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process as written in the TC Chapter meeting.

By / 2nd: Steve Martell (Sonoscan) / Mark Takahashi (Asahi Glass)

Discussion: None.

Vote: 4-0 in favor. Motion passed.

Attachment: SNARF_Guide for Describing(revisionv2)_atm

7.1.2 SNARF 6332

Rich Allen (NIST) addressed the committee on this topic. SNARF 6332 was revised to clarify title and scope. TC Member Review took place between 12/20/2017 and 01/03/2018 before approval by GCS on 01/11/2018.
In the 2018 March TF Meeting, TF members agreed to replace "Size" with "Characteristics" in the title:
This was brought to the committee for approval.

**Motion:** Motion to authorize revision to SNARF 6332, New Standard, Specification for Panel Substrate Characteristics for Fan-Out Panel Level Packaging (FO-PLP) Applications.

**By / 2nd:** Steve Martell (Sonoscan) / Rich Allen (NIST)

**Discussion:** None.

**Vote:** 6-0 in favor. Motion passed.

### 8 Next Meeting and Adjournment

The next meeting is scheduled for Tuesday, July 10, 2018 in conjunction with SEMICON West at the Marriott Marquis in San Francisco, California. See [http://www.semi.org/standards-events](http://www.semi.org/standards-events) for the current list of events.

**New Schedule:**

- **Wednesday, July 11**
  - 13:00-16:00 FO-PLP Panel (TF)

- **Thursday, July 12**
  - 09:00-10:30 3DP&I Bonded Wafer Stacks and Inspection and Metrology (TFs)
  - 10:30-12:00 3DP&I (C)


Respectfully submitted by:

Laura Nguyen
Coordinator, International Standards
SEMI Headquarters
Phone: 1.408.943.7019
Email: lnguyen@semi.org

Minutes tentatively approved by:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Allen (NIST), Co-chair</td>
<td>July 5, 2018</td>
</tr>
<tr>
<td>Sesh Ramaswami (Applied Materials), Co-chair</td>
<td>&lt;Date approved&gt;</td>
</tr>
<tr>
<td>Chris Moore (Covalent Metrology), Co-chair</td>
<td>&lt;Date approved&gt;</td>
</tr>
</tbody>
</table>

### Table 13 Index of Available Attachments

<table>
<thead>
<tr>
<th>Title</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMI Standards Required Meeting Elements</td>
<td>[2018Spring] Staff Report - 3DP&amp;I</td>
</tr>
<tr>
<td>[2017Fall] 3DP&amp;I NA Minutes FINAL_atm</td>
<td>SNARF_Guide for Describing(revisionv2)_atm</td>
</tr>
<tr>
<td>180402_JA_3DP&amp;I_Liaison_v1.0</td>
<td>[Ballot Results] Cycle 04-17 3DS-IC_atm</td>
</tr>
<tr>
<td>180118_Taiwan_3DP&amp;I_Liaison_v1.1_LNv</td>
<td>FO-PLP Panel TF Meeting_2018Apr_v3</td>
</tr>
</tbody>
</table>

#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.