

## ***DuraMAT 2018 Fall Workshop***

**Location:** Talks (Kavli Auditorium) and posters (SUSB:53)

**Talk Length:** 5-7 minutes, with 3 minutes after for online reviews

**Please hold questions until discussion panels at the end of each session**

**Wifi:** SLAC Visitor, connect and complete online form

**Tuesday Aug.28<sup>th</sup>**

*12:00 – 1:30 Registration, Posters up – (cafeteria available for lunch)*

### **Session I – Welcomes and Keynote 1**

Session Chair – Nancy Haegel, NREL

- 1:30 – 1:45 Welcome, Workshop Goals, Review Logistics – Teresa Barnes, NREL
- 1:45 – 2:00 Comments from DOE – Dana Olson, DOE
- 2:00 – 2:30 DuraMAT Consortium Update  
Teresa Barnes, NREL/Margaret Gordon, SNL
- 2:30 – 3:00 What's next for PV accelerated testing?  
Gabriela Bunea, SunPower

*3:00 – 3:30 Break w/Posters*

### **Session II – DuraMAT capability Presentations**

Session Chair – Margaret Gordon, SNL

- 3:30 – 3:40 The DuraMAT DataHub; Year 1  
Robert White, NREL– [Feedback](#)
- 3:40 – 3:50 Capability 1 – Data Analytics  
Anubhav Jain, LBL– [Feedback](#)
- 3:50 – 4:00 Capability 2 – Predictive Simulation: Progress and Updates  
James Hartley, SNL– [Feedback](#)
- 4:00 – 4:10 Capability 3 – Materials Forensics for Understanding PV Module Material  
Durability, Stephanie Moffit, SLAC– [Feedback](#)
- 4:10 – 4:20 Capability 4 – Combined-Accelerated Stress Testing for Advanced Reliability  
Assessment of Photovoltaic Modules  
Michael Owen-Bellini, NREL– [Feedback](#)
- 4:20 – 4:30 Capability 5 – Field Deployment for Reliability  
Bruce King, SNL– [Feedback](#)
- 4:30 – 4:40 Capability 6 – DuraMAT's Value Proposition to PV Project Economics by  
Targeting Improved Energy Yield and Lower Operations and Maintenance  
Expenses, Mike Woodhouse, NREL– [Feedback](#)
- 4:40 – 5:00 Discussion panel with Capability leads  
Panel Moderator: Margaret Gordon, SNL

5:00 – 6:30 *DuraMAT poster presentations and welcome reception  
(capability leads at posters)*

**Wednesday Aug. 29<sup>th</sup>**

*Breakfast 7:30 – 9:00*

**Session III – Keynote Session – Reliability of Glass/Glass Compared to Glass/Backsheet  
– What do we know and What do we need to know?**

Session Chair – Teresa Barnes, NREL

9:00 – 9:20 **Keynote:** Basics of Glass/Glass Reliability – Historical Data, Literature Reports, and What we Know Now, Josh Stein, SNL

9:20 – 9:40 **Keynote:** Glass/Glass vs. Glass Module Differences and Field Performance – What can we learn from limited field data? Dirk Jordan, NREL

9:40 – 10:00 Discussion of research needs and data gaps for glass/glass modules  
Moderators: Dirk Jordan, NREL & Josh Stein, SNL

*10:00 – 10:30 Break with posters  
(university and industry at posters)*

**Session IV – University and Industry projects**

Session Chair: Mark Hartney, SLAC

10:30 – 10:40 Novel Electrically Conductive Adhesive Materials with Multiple Fillers  
Yu Zhu, University of Akron– [Feedback](#)

10:40 – 10:50 Characterizing Adhesives and Edge Seals for Roll to Roll Photovoltaics Packaging, Samuel Graham, Georgia Tech– [Feedback](#)

10:50 – 11:00 Demonstrating New Concepts for Reliable Low-Cost Module Encapsulation and Barrier Technologies  
Daisy Yuen, Nick Rolston, Patrick Thornton, Stanford– [Feedback](#)

11:00 – 11:10 Hydrophobic-Hydrophilic Coatings for PV Solar Cover Glass  
Alan Lyons, CUNY– [Feedback](#)

11:10 – 11:20 Low-Cost, Advanced Metallization to Mitigate Cell-Crack-Induced Degradation  
Sang Han, Osazda Energy LLC– [Feedback](#)

11:20 – 11:30 Advanced Multifunctional Coatings for PV Glass to Reduce Soiling Losses  
Drew Fleming, WattGlass– [Feedback](#)

11:30 – 11:40 25 Year Low Cost Flexible Frontsheet  
David Okawa, SunPower– [Feedback](#)

11:40 – 12:00 Panel Discussion with project leads  
Panel Moderator: Mark Hartney, SLAC

*12:00 – 1:30 Luncheon / Posters  
(university and industry at posters 1-1:30)*

### **Session V - University projects and SPARKS**

Session Chair – Laura Schelhas, SLAC

- 1:30 – 1:40 Direct Imaging of Stress in Crystalline Silicon Modules  
Mariana Bertoni, Arizona State University/QESST– [Feedback](#)
- 1:40 – 1:50 Failure Mechanisms in ECA Interconnects: X-Ray Tomography  
Kathryn Fisher, Arizona State University/QESST– [Feedback](#)
- 1:50 – 2:00 Reliability of Modules Using High Efficiency Solar Cells with Copper Plated  
Contacts, Stuart Bowden, Arizona State University/QESST– [Feedback](#)
- 2:00 – 2:10 Discovering New materials for PV Encapsulation  
Tushar Shimpi, Colorado State University/NGPV– [Feedback](#)
- 2:20 – 2:30 A Novel Method to Evaluate the Crack Propensity of PV Backsheets  
Michael Kempe, NREL– [Feedback](#)
- 2:30 – 2:40 Cohesive Zone Model to Simulate PV Encapsulant Delamination  
Nick Bosco, NREL– [Feedback](#)
- 2:40 – 3:00 Panel Discussion with project leads  
Panel Moderator: Laura Schelhas and Don Jenket

### **Session VI –New Capability Development Projects**

Session Chair – Stephanie Moffitt, SLAC

- 3:00 – 3:10 New capability Presentations (2 slides each, 2-3 min/ person)
- A Unified Constitutive Model for the Degradation of Electrically Conductive Adhesives Nick Bosco, NREL
  - Correlation of Advanced Accelerated Stress Testing – Comparison of Backsheet Properties After Accelerated Testing and Field Deployment Michael Owen-Bellini, NREL
  - Module Level Solutions for Degradation by Ionization Damage Peter Hacke, NREL
  - DuraMAT Fielded Module Study – Comparison of Module Materials Properties Before and After Deployment Bruce King, SNL

Full DuraMAT Consortium Review– [Feedback](#)  
(Everyone is welcome to provide feedback)

*3:10 – 4:00 Break with posters  
(sparks and new capabilities at posters)*

4:00 – 5:30 IAB closed session  
IAB board members and DuraMAT leadership

***Thursday Aug. 30<sup>th</sup>***

DuraMAT team – DuraMAT Leadership Team and Capability Leaders Required, DECS invited.

*Breakfast 7:30 – 9:00*

8:30 – 12:00 DuraMAT Core Team Work Session  
Leadership Team and Capability Leaders required to attend  
Industry Board Members welcome

*Lunch on your own – SLAC Cafeteria available*