

## DuraMAT 2022 Fall Workshop

**Location: Beaver Run Resort, Breckenridge CO**

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

**Wifi: TBD**

### Monday August 29<sup>th</sup>

\*Arrival & check-in at hotel\*

### Tuesday August 30<sup>th</sup> – Coppertop 2

8:00 – 8:30 Breakfast (Peaks 14-16)

8:30 – 8:40 Welcome, Workshop Goals, Review Logistics – Teresa Barnes, NREL

8:40 – 9:00 DuraMAT Highlights– Teresa Barnes, NREL

#### Session I – Central Data Resource

Session Chair – Anubhav Jain (LBL) and Junki Joe (NREL)

9:00 – 9:15 D1 highlights and CO overview  
2 min Anubhav Jain, LBL

9:15 – 9:30 Assessing Factors Underpinning PV Degradation through Data Analysis  
2 min PI: Jain, LBL Speaker: Baojie Li, LBL – [feedback](#)

9:30 – 9:45 Panel Questions

**9:45 – 10:15 Break**

#### Session II – Multi-Scale Modeling

Session Chair – Michael Owen-Bellini (NREL) and Baojie Li, LBL

10:15 – 10:30 D1 highlights and CO overview  
2 min Michael Owen-Bellini, NREL

10:30 – 10:45 Analyzing Hail Impacts on PV Modules Using Computational Simulation  
(Virtual) Hartley, Sandia – [feedback](#)

10:45 – 11:00 Mechanical Models for 50-year Lifetime - PV Modules  
2 min PIs: Bosco/Bellini, Speaker: Junki Joe NREL – [feedback](#)

11:00 – 11:15 Panel Questions

#### Session III – Acceleration Science

Session Chair – David Miller (NREL) and **TBD**

11:15 – 11:30 D1 highlights and CO overview  
2 min David Miller, NREL

11:30 – 11:45 Rapid reliability prediction of emerging module interconnect technologies with  
combined-accelerated stress testing  
2 min PI: Hacke, Speaker: Nick Bosco, NREL – [feedback](#)

11:45 – 12:00 Application of Acceleration Science and Validation for Combined-Accelerated  
Stress Test Development: Balance of Systems Components  
2 min PI: Hacke, Speaker: Miller, NREL – [feedback](#)

12:00 – 12:15 Panel Questions

**12:15 – 1:15 Lunch (Please set up posters in Coppertop 3)**

**Session IV – Module Forensics**

Session Chair – Laura Schelhas (NREL), and Soňa Uličná, (NREL)

- 1:15 – 1:30 D1 highlights and CO overview  
2 min Laura Schelhas, NREL
- 1:30 – 1:45 Degradation Pathways in Glass/Glass Bifacial Photovoltaics with Emerging Encapsulants and Half-Cut Cells  
2 min Kern, NREL – [feedback](#)
- 1:45 – 2:00 In-situ Mapping of Deformation in Crystalline Silicon Modules: Understanding the Effects of Viscoelasticity  
2 min PI: Bertoni, ASU, Speaker: Ian Slauch, ASU – [feedback](#)
- 2:00 – 2:15 Fielded Module Library  
2 min PI: King, Sandia, Speaker: Elizabeth Palmiotti, Sandia – [feedback](#)

**2:15 – 3:00 Break & Posters (Coppertop 3)**

- 3:00 – 3:15 Effect of Cell Cracks on Module Power Loss and Degradation  
2 min Libby, EPRI – [feedback](#)
- 3:15 – 3:30 BOM Squad  
2 min PI: Barnes, Presenter: Karas NREL – [feedback](#)
- 3:30 – 4:00 Panel Questions

**Session V – Materials Solutions**

Session Chair – Bruce King (Sandia), and Elizabeth Palmiotti (Sandia)

- 4:00 – 4:15 D1 highlights and CO overview  
2 min Bruce King, Sandia
- 4:15 – 4:30 Advancing Bifacial Solar Module Reliability and Manufacturability with New Module Materials and Light-Weight Transparent Back Lamination  
2 min Dauskardt, Stanford– [feedback](#)
- 4:30 – 4:45 Advanced material development to support low-LCOE 25-year flexible photovoltaic modules  
2 min Pi: Ng, SunPower, Speaker: Namrata Salunke SunPower– [feedback](#)
- 4:45 – 5:00 Panel Questions

**5:00 – 6:30 DuraMAT poster presentations (Coppertop 3)**

## **Wednesday August 31<sup>st</sup> – Coppertop 2**

8:00 – 8:30 Breakfast (Peaks 14-16)

### **Keynote Speakers:**

8:30 – 9:00 Are Cracks Whack? Working Group Report Out – Elizabeth Palmiotti (Sandia), Martin Springer (NREL)

9:00 – 9:30 Reliable PV for Sustainable Deployment, Silvana Ovaitt, (NREL)

9:30 – 10:00 Industry Panel – What can DuraMAT do to accelerate manufacturing, deployment, and decarbonization?

### **Session VI – Getting Predictive - Going from observation to probability of failure?**

Session Chair – Teresa Barnes

10:00 – 10:15 Propagation of latent damage – what is the worst that could happen?  
Tim Silverman, NREL

10:15 – 10:30 Power loss and safety risks – recoverable vs. non-recoverable, and what else?  
Dirk Jordan, NREL

**10:30 – 10:45 Break (get your snack and coffee refill on the way to the breakout session)**

**10:45 – 11:15 Breakout Sessions: Cross-Capability Materials Durability Challenges**

**Location TBD** A: Sustainability, reliability, resilience, and waste – supply chains, design, and end of life management? **Silvana Ovaitt, Henry H**

**Location TBD** B: Moving from observable damage to safety/performance risk – what can we do now? What do we need to work on? **Lead: Dirk Jordan**

**Location TBD** C: More modules, more problems: given the rapidly changing state of module technologies, where should fundamental research and characterization development be focused? Lead: Nancy Haegel, NREL,

11:15 – 11:45 Break out session report & group discussion  
Teresa Barnes (NREL) and Laura Schelhas (NREL)

11:45 – 12:00 FY 23: New Awards Announcement and workshop awards  
Laura Schelhas, NREL

**12:00 – 1:00 Lunch**

1:00 Full Group Adjourns

Full DuraMAT Consortium Review – [feedback](#)

*(Everyone is welcome to provide feedback)*

1:15 – 3:00 IAB discussion – Invite only, DuraMAT Leadership & IAB

### **IAB Meeting Agenda**

1:15 – 1:45 General Feedback and questions from IAB based on presentations, posters, and other info

1:45 – 3:00 Opportunity Analysis of DuraMAT Research