2023 DuraMAT Workshop

STATE BAR OF NEW MEXICO | 5121 MASTHEAD ST NE ALBUQUERQUE, NM 87109 | SEPTEMBER 26-27, 2023

Host: Sandia National Laboratories

Tuesday, September 26, 2023

Breakfast
7:00 am – 8:00 am

Opening Remarks
8:00 am – 8:20 am

8:00 – 8:05	Welcome: *Cliff Hansen (Sandia National Laboratories)*
8:05 – 8:20	Program Overview: *Teresa Barnes (National Renewable Energy Laboratory)*

Session 1: Data, software, and analytics
8:20 am – 9:40 am — Chair: *Anubhav Jain (Lawrence Berkeley National Laboratory)*

8:20 – 8:40	Estimating the Value of Worker Training: A System Reliability & LCOE Perspective: *Brittany Smith (National Renewable Energy Laboratory)*
8:40 – 9:00	DuraMAT Data Hub Status: Visualizing Data Hub Contents with Knowledge Graphing: *Robert White (National Renewable Energy Laboratory)*
9:00 – 9:20	Best Practices for DuraMat Software Development: Tips to Save Time and Maximize Impact: *Anubhav Jain (Lawrence Berkeley National Laboratory)*
9:20 – 9:40	Discussion

Networking Break
9:40 am – 10:10 am

Session 2: Use of Accelerated Aging to Advance PV Reliability
10:10 am – 11:30 am — Chair: *David Miller (National Renewable Energy Laboratory)*

10:10 – 10:30	Rapid Reliability Prediction of Emerging Module Interconnect Technologies with Combined-accelerated Stress Testing; Focus on Low Temperature Interconnects: *James Hartley (Sandia National Laboratories)*
10:30 – 10:50	Improving Predictive Mechanics and Photochemical Degradation Kinetics Modeling for Polymeric Encapsulants: *Alan Liu (Stanford University)*

10:50 – 11:10	**Packaging Related Degradation Pathways in Bifacial PV Modules**: *Soňa Uličná (National Renewable Energy Laboratory)*
11:10 – 11:30	Discussion

Lunch
11:30 pm – 12:30 pm

Session 3: Plenary
12:30 pm - 1:50 pm	Co-Chairs: *Cliff Hansen (Sandia National Laboratories) & Michael Owen-Bellini (National Renewable Energy Laboratory)*
12:30 – 12:50	PV Power Plant Underperformance from a Lab, Field and Modeling Perspective: *Jim Crimmins (CFV Labs)*
12:50 – 1:10	**Towards Streamlining a Comprehensive Characterization Approach: A Case Study on Silicon Heterojunction Modules**: *Dylan Colvin (Florida Solar Energy Center)*
1:10 – 1:50	Views from the IAB: *Robert Flottemesch (Electric Power Research Institute), Nick De Vries (Silicon Ranch), Hoi Ng (SunPower/Maxeon)*

Networking Break
1:50 pm – 2:20 pm

Session 4: BOM Impacts – Trends, analytics, and forensic analysis
2:20 pm - 3:30 pm	Chair: *Laura Schelhas (National Renewable Energy Laboratory)*
2:20 – 2:40	Cross-sectional Depth Profiling of Accelerated and Field Aged Backsheet Materials: *Elizabeth Palmiotti (National Renewable Energy Laboratory)*
2:40 – 3:00	Data Analytics Applied to Equivalent Circuit Modeling for Production Power Data and to Bill of Materials Analysis: *Baojie Li & Anubhav Jain (Lawrence Berkeley National Laboratory)*
3:00 – 3:10	PV Module Bill-of-Materials Trends Since 2016: *Joe Karas (National Renewable Energy Laboratory)*
3:10 – 3:30	Discussion

Break
3:30 pm – 3:40 pm

Session 5: Advancements in Module Materials and Recycling
3:40 pm – 5:00 pm	Chair: *Bruce King (Sandia)*
3:40 – 4:00	Copper Metallization – Initial Results: *Thad Druffel (Bert Thin Films)*
4:00 – 4:20	Silicon Module Recycling by High-Power Lasers: *Mool Gupta (University of Virginia)*
4:20 – 4:40	Multifunctional and Durable Engineered Glass for PV Applications: *Jake Carter (Lawrence Berkeley National Laboratory)*

4:40 – 5:00	**Discussion**

Reception Hosted by Osazda

6:00 pm	204 Bryn Mawr Dr SE, Albuquerque, NM 87106
	RSVP requested (email to cwhanse@sandia.gov, michael.owenbellini@nrel.gov)

Wednesday, September 27, 2023

Breakfast
7:00 am – 8:00 am

Session 6: Cracks – they're still not good. Performance loss as damage evolves

8:00 am – 9:20 am	Chair: *Bruce King (Sandia National Laboratories)*
8:00 – 8:20	Progress Made in the Early Stages of EPRI's Award on Cell-Crack Project: *Viral Parikh (Electric Power Research Institute)*
8:20 – 8:40	Performance Impacts of Cell Cracks on Modern High-busbar Count PV Modules: *Todd Karin (PV Evolution Labs)*
8:40 – 9:00	Probabilistic Predictive Models for Si PV Cell Crack Stress and Power Loss: *Jennifer Braid (Sandia National Laboratories)*
9:00 – 9:20	Discussion

Break
9:20 am – 9:30 am

Networking Opportunities

9:30 am – 10:30 am	
	DECS – IAB Meeting: *Dennice Roberts (National Renewable Energy Laboratory)*
	Collaboration vs. Competition: *Teresa Barnes (National Renewable Energy Laboratory), Cliff Hansen (Sandia National Laboratories)*

Session 7: Modeling – Mechanical loading and degradation tools

10:30 am – 11:50 am	Co-Chairs: *Michael Owen-Bellini (National Renewable Energy Laboratory)*
10:30 – 10:50	A Simulation and Optimization Framework for Managing Wind-driven Loading on PV Systems: *Ethan Young (National Renewable Energy Laboratory)*
10:50 – 11:10	Analyzing Hail Impacts on PV Modules Using Computational Simulation: *James Hartley (Sandia National Laboratories)*

11:10 – 11:30   Industry Facing PV Degradation Prediction Tool and Degradation Database to Enable a 50 Year Life Module: *Mike Kempe (National Renewable Energy Laboratory)*

11:30 – 11:50   Discussion

Closing Remarks
11:50 am – 12:00 pm

Lunch
12:00 pm - 1:00 pm

IAB Meeting
1:00 pm - 3:00 pm