4th Atlas/NIST Workshop on Photovoltaic Materials Durability Agenda

December 5 and 6, 2017

Building 101, Portrait Room

NIST, Gaithersburg, MD 20899

Day 1: December 5 th , 2017		
8:00 - 8:30 AM	Continental Breakfast	
8:30 - 8:45 AM	Opening Remarks Joannie Chin, Deputy Director, NIST Engineering Laboratory & Al Zielnik, Global Weathering Applications Manager, Atlas	
Session 1: General (Chair: Al Zielnik, Atlas Material Testing Technology)		
8:45 - 9:10 AM	Applying Weathering Science to Predict the Future – The Reliable Approach to Estimating Product Service Life, David Burns (3M)	
9:10 - 9:35 AM	The DuraMAT Consortium: Integrating National Lab Expertise with Industry Needs to Improve PV Module Durability, Jonathan Trinastic (DOE)	
9:35 - 10:00 AM	A novel Adhesive Mounted Building PV Technology, Christian Honeker (Fraunhofer USA)	
10:00 - 10:15 AM	Break	
Session 2: PV Module Field Survey (Chair: George Kelly, Sunset)		
10:15 - 10:40 AM	DuPont Worldwide Field Inspection Results, Tom Felder (Dupont, USA)	
10:40 - 11:05 AM	PV Array Differential Backside Exposure Conditions: Backsheet Degradation and Site Design, Andrew Fairbrother (NIST)	
11:05 - 11:30 AM	Trends in Field Failure Modes, John Wohlgemuth (PowerMark Corporation)	
11:30 - 12:00 PM	Panel Discussion 1 (Chairs: Teresa Barnes, NREL & George Kelly, Sunset)	
12:00 - 1:45 PM	Lunch and Poster Session	
Session 3: Accelerated Laboratory Testing (Chair: David Miller, NREL)		
1:45 - 2:10 PM	Sequential or Simultaneous Combination of Stress Factors, Michael Koehl (Fraunhofer ISE, Germany)	
2:10 - 2:35 PM	Interdependent Multi-Stress Effect on PV Laminate and Backsheet Degradation, Xiaohong Gu (NIST)	
2:35 - 3:00 PM	Thermal Cycling/Water Spray, ASTM D7869 - A Better Laboratory Approach to Climate Simulation, Allen Zielnik (Atlas Material Testing Technology)	
3:00 - 3:15 PM	Break	
3:15 - 3:40 PM	Durability of Polymer Materials Subjected to Multi-Weathering Factors: The Role of Mechanical Stress, Guangxian Li (Sichuan Univ., China)	
3:40 - 4:05 PM	Testing and analyses for multiple PID mechanisms and stresses, Peter Hacke (NREL)	
4:05 - 4:30 PM	Panel Discussion 2 (Chairs: David Miller, NREL and Stephanie Watson, NIST)	
4:30 PM	Adjourn/NIST Labs Tour (NIST SPHERE; Net-Zero Energy House)	

Day 2: December 6 th , 2017		
8:00 - 8:30 AM	Continental Breakfast	
Session 4: Linking Accelerated Testing to Field Performance and Lifetime Modeling (Chair: Nancy Phillips, DuPont)		
8:30 - 8:55 AM	Field and Laboratory correlation of PV Materials, Bill Gambogi (Dupont, USA)	
8:55 - 9:20 AM	Short-term and Long-term Failures Related to Encapsulant Observed in PV Power Plants, Tsuyoshi Shioda (Mitsui Chemicals, Japan)	
9:20 - 9:45 AM	Assessment of Photovoltaic Module Backsheets as a Critical Indicator of Degradation and Modeling of Module Durability in Different Climatic Zones, Ken Boyce (UL)	
9:45 - 10:00 AM	Break	
10:00- 10:25 AM	Statistical Modeling for SLP of PV Materials and Laminates, Yili Hong (Virginia Tech)	
10:25 - 10:45 AM	Panel Discussion 3 (Chairs: Nancy Phillips, DuPont & John Wohlgermuth, PowerMark)	
Session 5: Characterization (Chair: Xiaohong Gu, NIST)		
10:45 - 11:10 AM	Prospects of 2D-luminescence spectroscopy for aging investigations of the embedding EVA polymer in PV modules, Beate Roeder (Humboldt-Universität, Germany)	
11:10 - 11:35 AM	Quantifying adhesion in PV modules: A historical survey and degradation processes, Nick Bosco (NREL)	
11:35 - 12:00 PM	Optical Characterization of PV Glass Coupons and PV Modules Related to Soiling Losses, Greg Smestad (Sol Ideas Technology Development)	
12:30 - 1:30 PM	Lunch	
1:30 - 1:55 PM	Survey of Mechanical Durability of PV Backsheets in Response to Accelerated Stress Testing, Mike Kempe (NREL)	
1:55 - 2:20 PM	Fragmentation Test for Crack Propensity Evaluation of PV Backsheets, Jae Hyun Kim (NIST)	
2:20 - 2:45 PM	Panel Discussion 4 (Michael Koehl, Fraunhofer ISE & Xiaohong Gu, NIST)	
2:45 - 3:00 PM	Break	
Session 6: Link Research to Standards (Chair: David Burns, 3M)		
3:00 - 3:25 PM	DC Voltage Breakdown of Relied Upon Insulator Materials: Test Method development and Results from Artificially Weathered and Veteran Specimens, David Miller (NREL)	
3:25 - 3:50 PM	Progress in IEC PV Component Weathering Standards, Nancy Phillips (DuPont)	
3:50 - 4:15 PM	IEC Standards Development and the IECRE Conformity Assessment System, George Kelly (Sunset Technology)	
4:15 - 4:40 PM	Panel Discussion 5 (Chairs: David Burns, 3M & Allen Zielnik, Atlas)	
4:40 PM	Summary and Adjourn (Al Zielnik, Atlas & Xiaohong Gu, NIST)	