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Reliability of Photovoltaic Cells, Modules, Components, and Systems VIII

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Editors

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- 2 PV Module Reliability Accelerated and Outdoor Testing
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- 3 Potential Induced Degradation (PID)
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- 4 PV Module Reliability I
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- 5 Thin Film PV Module Reliability
Rebecca Jones-Albertus, U.S. Department of Energy (United States)
- 6 PV Module Reliability II
Thomas C. Felder, DuPont (United States)

Introduction

The eighth Reliability of Photovoltaic Cells, Modules, Components and Systems conference, part of the 2015 SPIE Optics + Photonics symposium, was composed of a full schedule of highly anticipated presentations from a number of highly regarded experts from both the photovoltaic (PV) industry and academia. The conference was well attended with a number of international papers from national laboratories, institutes and universities in the United States, Japan, Germany, Switzerland, Spain, Algeria, Italy, Thailand, and Brazil.

The first session on Sunday on Encapsulant, Backsheet, and Packaging Materials was chaired by Keiichiro Sakurai from the National Institute of Advanced Industrial Science and Technology, (AIST) (Japan). The session included two invited talks on the development of a resistivity standard for polymeric materials and of backsheet tests and measurements to improve correlation of accelerated exposures to fielded modules of authors from United States, Japan and Switzerland. There were two presentations on cracking, delamination, and mechanical degradation of PV backsheets after accelerated laboratory testing and UV exposure. The second session on PV Module Reliability Accelerated and Outdoor Testing was chaired by Michel D. Kempe, National Renewable Energy Laboratory (United States). It had two invited talks on effects of UV and light illumination and sequential tests such as damp heat, temperature cycling, differential mechanical loading, and humidity freeze on flexible and rigid PV modules. Two other papers on experimental and computational investigation of microcrack behavior under combined environments and comparison of accelerated testing and field exposure. The third session on Potential Induced Degradation (PID) was chaired by Takuya Doi, AIST (Japan). It had three papers (two invited) on survey of PID in thin-film modules and material properties measurements, quality control counter measures and modeling framework for PID in PV modules. The fourth session entitled, "PV Module Reliability I," was chaired by Juliane Berghold, PI Photovoltaik-Institut Berlin AG (Germany). It had invited and regular papers on reduction of PV rooftop system output power due to heat gain, partial shade stress test of thin-film PV modules, and module reliability improvements and growth of PV industry. This was followed by the symposium-wide plenary session.

The first session on the second day on Thin Film PV Module Reliability was chaired by Rebecca Jones-Albertus, U.S. Dept. of Energy. It had one invited presentation on the effect of atmospheric species on the degradation of CIGS solar cells and molybdenum films. There were three regular presentations on the comparison of reliability of thin-film and multicrystalline silicon PV modules, analysis of thin film PV module degradation using data science, and dark measurements technique. The second session on PV Module Reliability II was chaired by Thomas C. Felder, DuPont (United States). The session had one invited presentation and three

regular papers on white solar modules for building integrated photovoltaics, PV reliability group and its activities in the United States and Brazil.

This was followed by plenary session which had a presentation on importance of reliability to the SunShot Initiative. Finally, on Monday afternoon there was a poster session.

The conference organizers would like to thank each presenter for their contribution to the technical program and everyone who participated in this year's conference for their interest and support. We wish everyone the best of luck in their technical and scientific endeavors, and would like to invite everyone back to next year's conference to present their latest achievements in the Reliability of Photovoltaic Cells, Modules, Components and Systems.

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