

20th Workshop on Crystalline Silicon Solar Cells & Modules: Materials and Processes

Saturday, July 31, 2010

7:00 - 8:00 pm | CHECK-IN / REGISTRATION

Sunday, August 01, 2010

7:30 - 9:30 am | REGISTRATION & CONTINENTAL BREAKFAST (provided)

WELCOME

8:40 - 9:00 am | Bhushan Sopori, National Renewable Energy Laboratory

SESSION 1 | ***Compensated Silicon: How Well Do We Understand This "New" Material?***

Chairperson: Michio Tajima (ISAS / JAXA)

9:00 - 9:40 | Otwin Breitenstein (Max Planck Institute), J. Bauer, K. Bothe, W. Kwapil, D. Lausch, U. Rau, J. Schmidt, M. Schneemann, M. Schubert, J.M. Wagner, W. Warta: **"Understanding Junction Breakdown In Multi-Crystalline Solar Cells"**

9:40 - 10:20 | Simona Binetti (Uni Milano) and M. Acciarri: **"Dopants Determination in Compensated Silicon: Spectroscopic and Electrical Methods and Issues"**

10:20 - 10:40 | BREAK

10:40 - 11:20 | Jan Schmidt (ISFH): **"Effect of Dopant Compensation On Lifetime Degradation and Regeneration In Cz-Si"**

11:20 - Noon | DISCUSSION: **De-mystifying Compensated Silicon**

Leader: Roland Einhaus (Apollon Solar)

Noon - 1:30 pm | LUNCH BUFFET (provided)

1:30 - 1:50 pm | Minh Le (DOE Solar Energy Technology Program): **"DoE's Role in the Future of PV"**

SESSION 2 | ***The State of the Art in Production Silicon Solar Cells***

Chairperson: Ron Sinton (Sinton Instruments)

1:50 - 2:30 | Andrew Beebe (SunTech): **"The Development and Implentation of Pluto High-efficiency Cells"**

2:30- 3:10 | Yuji Hishida (Sanyo), H. Sakata and Eiji Maruyama: **"Recent Progress in High-efficiency HIT Solar Cells"**

3:10 - 3:30 | BREAK

3:30 - 4:30 | DISCUSSION: **High Efficiency Solar Cells: Promise and Realization**

Leader: Denis DeCeuster (Tetra Sun)

6:00 - 6:45 pm | WELCOME RECEPTION

6:45 - 8:30 pm | RUMP SESSION

Theme: **Successful Case Studies From The Last 20 Years Of Silicon, and Promising Areas For Progress In The Next 10**

Leader: Terry Jester

Panel: TBD (Representatives of key industrial breakthroughs)

Each panelist will talk about:

- a) A key accomplishment in their company
- b) Something external to their company that they greatly admire
- c) Where will the progress come from during the next 10 years?

Monday, August 02, 2010

7:00 - 8:00 am	CONTINENTAL BREAKFAST (provided)
SESSION 3	<i>In-Line and Offline Characterization</i> Chairperson: Steve Johnston (NREL)
8:00 - 8:45 am	Holger Neuhaus (SolarWorld Innovations): "Overview On In-line and Offline Testing and Statistical Process Control"
8:45 - 9:15	<u>Kay Dornich</u> (Freiberg Instruments), N. Schüler, D. Mittelstrass, J.R. Niklas: "In-line and Offline Microwave Lifetime Measurements at Wafers and Bricks"
9:15 - 9:45	Henning Nagel (Schott): "Luminescence Measurements - A Key Metrology For Crystalline Silicon PV"
9:45 - 10:15	BREAK
10:15 - 11:30	DISCUSSION: In-line and Offline-Characterization: Production Use of Characterization Technology. Leader: Thorsten Trupke (BT Imaging)
11:30 - Noon	Dan Meier (Suniva): "High-Efficiency Production Solar Cells"
Noon - 1:30 pm	LUNCH BUFFET (provided)
	AFTERNOON BREAK FOR SIDE MEETINGS
6:30 -8:30 PM	RECEPTION
7:00 - 9:00 pm	POSTER SESSION

Tuesday, August 03, 2010

7:00 - 8:00 am	CONTINENTAL BREAKFAST (provided)
SESSION 4	<i>Turn-Key Lines: The Role of Turn-Key Lines in Implementing Innovation</i> Chairperson: Tom Surek (Surek PV Consulting)
8:00 - 8:50 am	Thomas Hengst (Roth and Rau): "State-Of-The-Art In Crystalline Silicon PV Lines"
8:50 - 9:30	Helge Haverkamp (Schmid GmbH): "Inline Selective Emitter Technology - From Laboratory Development To GWp-Scale Production"
9:30 - 10:00	Hartmut Nussbaumer (RENA), D. Kray, N. Bay, G. Cimiotti, S. Kleinschmidt, N. Kösterke, A. Lösel, M. Sailer, A. Träger, H. Kühnlein: "Self-Aligned Selective Emitter and Metallization by RENA"
10:00 - 10:30	BREAK
10:30 - 10:50	Jon-Paul Maria (North Carolina State University): "Local Conversion of SiNx Antireflection Coatings to Ultra-low Resistivity Refractory Metal Nitride Emitter Contacts"
10:50 - Noon	DISCUSSION: Innovation: Institutes, Turn-key Vendors, and Manufacturers Leader: Giso Hahn (University of Konstanz)
Noon - 1:30 pm	LUNCH BUFFET (provided)
SESSION 5	<i>PV Material: Understanding and Managing the Defects</i> Chairperson: George Rozgonyi (North Carolina State)
1:30 - 1:50 pm	Teh Tan (Duke University): Comments In Memorium of Ulrich Goessele
1:50 - 2:35	Eicke Weber (Fraunhofer ISE): "20 Years of Progress in Understanding the Role of Defects in PV Silicon, Including Recent Applications to UMG Silicon"
2:35 - 3:05	Bhushan Sopori (NREL and MEMC): "Defects, Defect Distributions, and Impurities in Multicrystalline Silicon: Their Influence on Solar Cell Performance"
3:05 - 3:35	BREAK
SESSION 6	<i>Special Topics</i> Chairperson: TBD
3:35 - 4:20	Mariska de Wild-Scholten (ECN): "Energy Payback And Carbon Footprint Of PV Technologies"
4:20 - 4:40	Alan Goodrich (NREL): "Wafer Base Si PV: A Road Map of Technical Improvement and Cost Reduction Opportunities"
4:40 - 5:30	DISCUSSION: Sustainability Issues with Silicon PV Leader: Ethan Good (Solarworld USA)
6:30 - 8:30 PM	RECEPTION
7:00 - 9:00 pm	POSTER SESSION

Wednesday, August 04, 2010

7:00 - 8:00 am	BREAKFAST BUFFET (provided)
SESSION 7	<i>Feedstock and Crystal Growth: Critical Factors in Cell Cost and Performance</i> Chairperson: Tonio Buonassisi (MIT)
8:00 - 8:45 am	Hubert Aulich (PV Silicon): " Solar-Grade Silicon Production And Processing Technologies "
8:45 - 9:15	<u>Mariana Bertoni</u> (MIT), D.M. Powell, S. Castellanos, M.L. Vogl, A. Fecych and T. Buonassisi: " Stress and Dislocations: A Counterintuitive Story "
9:15 - 9:35	<u>Dominic Leblanc</u> (Becancour Silicon) and Karol Putyera: " New Resistivity Model For Compensated-Si "
9:35 - 10:00	BREAK
10:00 - 11:00	DISCUSSION: Crystalline Silicon Wafers: Pushing The Limits On Cost and Quality Leader: Lode Carnel (REC Wafer)
SESSION 8	<i>WRAP UP</i>
11:00 - Noon	Moderator: Bill Mulligan
Noon	WORKSHOP ADJOURNS