



אוניברסיטת בן-גוריון בנגב
Ben-Gurion University
of the Negev

Program
16th Sede Boqer Symposium
on Solar Electricity Production
February 14 – 16, 2010

Sponsored by:

Ben-Gurion University of the Negev.
Jacob Blaustein Center for Scientific Cooperation.
Israel Ministry of National Infrastructures
Newport - New Technology
Ralco Energy Ltd.
SolarEdge Technologies
Zenithsolar Ltd.



Israel Ministry of
National Infrastructures



Program

Sunday, February 14, 2010

:900 – 10:30 Arrival at the Evens Auditorium, Midreshet Ben-Gurion, **Registration & Reception**

10:30-11:00 Opening Greetings

(Chair: Prof. David Faiman, BGU Blaustein Institutes, Sede Boqer)

Prof. **Moti Herskowitz**

Vice-President and Dean for R&D, Ben-Gurion University of the Negev

Prof. **Avigad Vonshak**

Director, BGU Blaustein Institutes for Desert Research

Dr. **Avraham Arbib**

Israel Ministry of National Infrastructures

Dr. **Avraham Cohen**

Israel Ministry of Science

Mr. **Eran Doron**

Ramat Negev Regional Council

11:00-12:30 Session 1: Systems I

(Chair: Dr. Avraham Arbib, Israel Ministry of National Infrastructures)

1. *A Novel Power Block for CSP Systems*

Gur Mittelman

ASP Ltd., Be'er Tuviyya, Israel

2. *Full Landscape of Aplanatic Optics for Solar Concentration near the Thermodynamic Limit*

Natalia Ostroumov, Jeffrey M. Gordon and Daniel Feuermann

Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion

3. *Novel Solar Concentrators from Third-Generation Non-Imaging Optics*

Alex Goldstein and Jeffrey M. Gordon

Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion

4. *Use of Storage to Enhance Grid-Matching of Photovoltaics*

A. A. Solomon¹, David Faiman¹ and Giora Meron²

¹Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion; ²Israel Electric Corp, Haifa

12:30-13:30 Lunch – Dining room, High School for Environmental Studies

13:30-15:00 Session 2: Devices I

(Chair: Prof. Yossi Appelbaum, Tel Aviv University)

1. *Absorption Enhancement in Thin Silicon Substrate Using Embedded Metallic Nanoshells*
Oren Guilatt¹, Boris Apter², Isak David², Pavel Fay¹, and **Uzi Efron**^{1,2}

¹Dept. of Electro-Optical Engineering, Ben-Gurion University, 84105 Beer Sheva; ²Dept.

For updates: <http://cmsprod.bgu.ac.il/Eng/conferences/solar/>

- of Electrical Engineering, Holon Institute of Technology, Holon
2. *Auger Recombination as the Ultimate Performance-Limiting Mechanism in Concentrator Solar Cells*
Alexis O. Vossier and Jeffrey M. Gordon
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion
 3. *An Outdoor Method for Quantifying the Spectral Behavior of PV Panels*
Lior Levy and David Faiman
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion
 4. *Inverter Degradation during 5 years of use in 6 Grid-Connected PV Systems at Sede Boqer*
Shlomo Gore¹, David Faiman² and Herzl Aharoni¹
¹Dept. of Electrical Engineering, Ben-Gurion University, 84105 Beer Sheva; ² Blaustein Institutes for Desert Research, BGU 84990 Midreshet Ben-Gurion.

15:00-15:30 Coffee break

15:30-16:30 Session 3: Invited Keynote Lecture and Discussion

(Chair: Prof. Aharon Roy, Ben-Gurion University)

ISFOC: The Spanish Test Center for Concentrator Photovoltaic Systems - Latest Results

Francisca Rubio Berenguel

ISFOC S.A.

16:30-17:00 Coffee Break

17:00-18:30 Session 4: Systems II

(Chair: Prof. Avraham Kribus, Tel Aviv University)

1. *First Results from the MST CPV system at Arad*
Dov Raviv and Roy Rosenstreich
MST Ltd., 76701 Rehovot
First Results from the Zenithsolar CPV system at Kvutzat Yavneh
Haim Hayat
Zenithsolar Ltd., 82000 Kiryat Gat
2. *Grid Matching PV Systems without Storage*
A. A. Solomon¹, David Faiman¹ and Giora Meiron²
¹Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion; ² Israel Electric Corp, Haifa
3. *An Ultra-High Irradiance Solar Furnace for Solar Cell Characterization and Nanomaterial Synthesis*
Dotan Babai, Daniel Feuermann and Jeffrey M. Gordon
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion
4. *Solar Photovoltaic Based Hybrid Power Plants with High Clean Energy Output and Grid-Backing Capability*
Aharon Roy
Dept. of Chemical Engineering, Ben-Gurion University, 84105 Beer Sheva

18:30-19:00 Free time, Room assignments

19:00-20:00 Dinner – Lobby of Institute Guest House

20:30-22:00 Concert – Evens Auditorium

On Shepherds and Romance

Sivan Rotem, soprano; **Orit Orbach**, clarinet; **Evgeni Lisogursky**, piano

Wolfgang Amadeus Mozart (1756-1791): *Parto, Parto!*
(from the opera *La Clemenza di Tito*) - for voice, clarinet & piano

Konradin Kreutzer (1780-1849): *Das Mühlrad*
- for voice, clarinet & piano

Franz Lachner (1803-1890): 2 songs
- for voice, clarinet & piano

Felix Mendelssohn (1809-1847): *Auf Flügeln des Gesanges*
- for voice & piano

Robert Schumann (1810-1856): *Seit ich ihn gesehen*
- for voice & piano

Louis Spohr (1784-1859): 6 German Songs
- for voice, clarinet & piano

Intermission

Felix Mendelssohn (1809-1847): Sonata in Bb Major
- for clarinet & piano

Giacomo Meyerbeer (1791-1864): *Hirtenlied*
- for voice, clarinet & piano

Franz Schubert (1797-1828) *Das Hirt auf dem Felsen*
- for voice, clarinet & piano

Monday, February 15, 2010**9:00-10:30 Session 5: Devices II**

(Chair: Prof. Enrique Gruenbaum, Tel Aviv University)

1. *Fundamentally New Aspects of Tunnel Diode Transitions in Multi-Junction Photovoltaics*
Avi Braun¹, Baruch Hirsch¹, Eugene A. Katz¹, Jeffrey M. Gordon¹, Wolfgang Guter² and Andreas W. Bett²
¹Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion; ²Fraunhofer-Institut für Solare Energiesystem, 79110 Freiburg, Germany
2. *CPV Modules based on Monolithic Vertical Multijunction Cells*
Gideon Segev¹, Avraham Kribus¹, R. Pozner¹, Rona Sarfaty² and Yosef Rosenwaks¹
¹Faculty of Engineering, Tel Aviv University, 69978 Tel Aviv; ²Electrical and Electronics Dept., Ort Braude College, 21982 Karmiel
3. *Effect of Design and Fabrication Technology on Efficiency of Bifacial Si Solar Cells at Low Irradiances*
Ygal Eisenberg, Lev Kreinin, Ninel Bordin, Jacob Broder and Naftali Eisenberg
Jerusalem College of Technology, 91160 Jerusalem
4. *SolarEdge – Field Results of Energy Maximizing Distributed DC Topology*
Meir Adest
SolarEdge Technologies, 45240 Hod Hasharon

10:30-11:00 Coffee Break**11:00-12:30 Session 6: Systems III**

Chair: Prof. Daniel Feuermann, Ben Gurion University

1. *BrightSource Solar Mirror Accelerated Life Test Methodology*
Roi Yecheskel
BrightSource Israel, 91405 Jerusalem
2. *Solar Radiation Maps of the Negev*
David Faiman¹ and Daniel Blumberg²
¹Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion; ²Dept. of Geography, Ben-Gurion University, 84105 Beer Sheva
3. *Grid-Matching of wind and PV/wind Hybrids*
A. A. Solomon¹, David Faiman¹ and Giora Meron²
¹Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion; ²Israel Electric Corp, Haifa
4. *Contamination of Solar Collectors by Dust: Effects, Related to Wet Deposition*
Sergey Biryukov and Leonid Yarmolinsky
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion

12:30-13:30 Lunch – Dining room, High School for Environmental Studies**13:30-15:00 Session 7: Devices III**

(Chair: Prof. Moshe Levy, Weizmann Institute of Science)

1. *Polyselenophenes: A Novel Type of Conducting Polymers with Potential for Applications in Organic Solar Cells*
Michael Bendikov
Dept. of Organic Chemistry, Weizmann Institute of Science, 76100 Rehovot

For updates: <http://cmsprod.bgu.ac.il/Eng/conferences/solar/>

2. *Waveguide Enhanced Light Harvesting in Thin Film Photovoltaics*
Shlomit Greenwald, Sven Rühle and Arie Zaban
Dept. of Chemistry, Bar-Ilan University, 52900 Ramat Gan
3. *Effects of concentrated sunlight on the photovoltaic performance and stability of polymer-fullerene bulk heterojunction solar cells.*
Eugene A. Katz¹, Thomas Tromholt², Baruch Hirsch¹, Alexis Vossier¹ and Frederik C. Krebs². ¹Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion, ²Risø National Laboratory for Sustainable Energy, Technical University of Denmark
4. *Development of Large Area, Glass-based PV Dye Cells and Modules*
Jonathan Goldstein, Ilya Yakupov and Barry Breen
3GSolar Ltd.

15:00-15:30 Coffee break

15:30-16:30 **Session 8: Invited Keynote Lecture and Discussion**

(Chair: Prof. Herzl Aharoni, Ben Gurion University)

Thin Film Photovoltaics: On Reaching Adolescence

Timothy J. Coutts

EPIR Technologies and National Renewable Energy Laboratory (NREL)

16:30-17:00 Coffee Break

17:00-18:30 **Session 9: Energy Saving, Fuel Production, Etc.**

(Chair: Prof. David Faiman, Ben Gurion University)

1. *Ultrahigh Bioproductivity from Algae*
Jeffrey M. Gordon¹ and Juergen E.W. Polle²
¹Jacob Blaustein Institutes for Desert Research, BGU, 84990, Midreshet Ben-Gurion; ²Dept. of Biology, Brooklyn College of the City University of New York, NY, USA
2. *Solar Chemistry: Beyond direct electricity production*
Hanna H. Klein
EZKlein
3. *The Dynamics of Solar Water Heating Adoption: Comparing Amman and Ramallah*
Yaakov Garb, Sawsan Esse and Evyatar Erell
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion
4. *Energy Saving vs. Flat-Panel PV*
David Faiman
Jacob Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben Gurion

Closing Remarks – David Faiman

18:30-19:30 **Festive Dinner** – Lobby of Institute Guest House



Tuesday, February 16, 2010

IEA-PVPS Task 8 – An Open Workshop
VLS-PV: Very Large Scale Photovoltaic Power Plants

(Chair: Prof. David Faiman, BGU – Blaustein Institutes)

- 9:00-9:25** *VLS-PV Projects – Success Factors*
Edwin Cunow
 PV Consultant, Germany
- 9:25-9:50** *Projecting VLS-PV Power Generation Costs*
Claus Beneking
 Aixcell Solar Technology GmbH, Germany
- 9:50-10:20** **Coffee Break**
- 10:20-10:45** **Keynote Lecture**
Molecular Photovoltaics and Mesoscopic Solar Cells
Michael Grätzel
 Ecole Polytechnique Fédérale de Lausanne, Switzerland
- 10:45-11:10** *VLS-PV and Grid Penetration*
A. A. Solomon
 Blaustein Institutes for Desert Research, BGU, 84990 Midreshet Ben-Gurion
- 11:10-11:35** *Socio-Economic Opportunities with VLS-PV*
Peter v. d. Vleuten
 Free Energy International, Eindhoven, the Netherlands
- 11:35-12:00** *Solar-Driven Desalination – an Overview*
Joachim Kochikowski
 Fraunhofer Institute for Solar Energy Systems, ISE, Germany
- 12:00-12:30** **Open Discussion**
- 12:30-13:30** *Lunch*
- 13:30** Transportation to Eilat-Eilat Renewable Energies Conference
For more on this conference: <http://eilatenergy.org/site>
For updates: <http://cmsprod.bgu.ac.il/Eng/conferences/solar/>

