Fraunhofer
ISE

Publications

28th European Photovoltaic Solar Energy Conference and Exhibition, September 30 –October 4, 2013 • Paris, France

Fraunhofer Institute for Solar Energy Systems ISE

Division Solar Cells – Development and Characterization
Division PV Production Technology and Quality Assurance
Division Materials – Solar Cells and Technology
Division Solar Thermal and Optics
Division Photovoltaic Modules, Systems and Reliability

Heidenhofstrasse 2
79110 Freiburg
Germany

Bett_1AP.1.1
A.W. Bett
Keynote Presentation: Overview of Technology Perspectives for High Efficiency Solar Cells for Terrestrial and Space Applications

Bivour_2CV.4.2
M. Bivour, M. Reusch, S. Schröer, F. Feldmann, M. Hermle
Analysis of a-Si:H Doping by Suns-V_{oc} Measurements for Silicon Heterojunctions

Demant_2CV.4.5
M. Demant, H. Höffler, D. Schwaderer, A. Seidl, J. Haunschild, S. Rein
Evaluation and Improvement of a Feature-Based Classification Framework to Rate the Quality of Multi-Crystalline Silicon Wafers

Dreger_1CV.6.27
M. Dreger, M. Wiesenfarth, T. Schmid, A.W. Bett
Analysis of High Concentration Passively Cooled CPV Module Designs Using Mirror Optics

Dürr_4AV.5.37
I. Dürr, C. Peike, S. Hoffmann, M. Köhl, K.-A. Weiß
X-Ray Study on the Damp-Heat Induced Cell Degradation (DHID)

Eisenlohr_1AV.2.15
J. Eisenlohr, H. Hauser, J. Benick, A. Mellor, B. Bläsi, J.C. Goldschmidt, M. Hermle
Integrating Diffractive Rear Side Structures for Light Trapping into Crystalline Silicon Solar Cells

Feldmann_2CO.4.4
F. Feldmann, M. Bivour, C. Reichel, M. Hermle, S.W. Glunz
A Passivated Rear Contact for High-Efficiency n-Type Si Solar Cells Enabling High V_{oc}S and FF > 82%

Fernandez Robledo_2BV.1.29
S. Fernandez Robledo, U. Jäger, E. Lohmüller, J. Nekarda, R. Preu
Laser Doping from Borosilicate Glass for Metallization of Boron Emitters

Flarup Jensen_3DV.2.27
K. Flarup Jensen, H. Brandt, C. Im, J. Wilde, A. Hinsch
Stability of UV Illuminated Dye Sensitized Solar Cells (DSC) studied by Photoinduced Absorption in the Second Range

Heckelmann_1CV.6.17
S. Heckelmann, D. Lackner, F. Dimroth, A.W. Bett
Investigation of MOVPE Grown $Al_xGa_{1-x}As$ as Material for Multi-Junction Solar Cells

Hendrichs_2CV.3.6
M. Hendrichs, B. Thaidigsmann, T. Fellmeth, S. Nold, A. Spribille, P. Herrmann, M. Mittag, I. Hädrich, U. Eitner, F. Clement, D. Biro, R. Preu
Cost-Optimized Metallization Layout for Metal Wrap Through (MWT) Solar Cells and Modules

Hinsch_3DO.9.1
A. Hinsch
Status of the Dye Solar Cell Technology (DSC) as a Guideline for Further Research

Hoffmann_4AV.5.48
S. Hoffmann, M. Köhl
Modeling the Leakage Current for Potential Induced Degradation

Hofmann_2BV.1.45
M. Hofmann, N. Kohn, D. Trogus, S. Kühnhold, P. Saint-Cast, J. Rentsch, F. Schwarz, S. Nölker, S. Kastl, R. Beckmann, R. Ferré, T. Pernau
High-Power-Plasma PECVD of SiNx and Al2O3 for Industrial Solar Cell Manufacturing

Höhn_1AV.2.25
O. Höhn, T. Kraus, M. Zilk, U T. Schwarz, B. Bläsi
Photonic Band Gap Engineering of Solar Cells

Janz_1DO.5.2
S. Janz, M. Schnabel, P. Löper, C. Summonte, M. Canino, J. López-Vidrier, S. Hernández, B. Garrido, S.W. Glunz
Processing and Characterisation of Tandem Solar Cells from Crystalline Silicon Materials

Jüchter_1DO.6.2
S. Jüchter, S.-K. Meisenheimer, H. Hauser, Ch. Wellens, O. Höhn, V. Kübler, T. Fix, U.T. Schwarz, B. Bläsi
Plasmonic Particle Arrays on Large Areas for Photon Management

Kafle_2BV.2.40
B. Kafle, D. Trogus, D. Köhler, B. Dressler, G. Mäder, E. Duffy, L. Clochard, M. Hofmann, J. Rentsch
Industrial Screen Printed Solar Cells with Novel Atmospheric Pressure Thermo-Chemical Dry Texturing Process

Karcher_1CO.13.5
C. Karcher, H. Helmers, Michael Schachtner, F. Dimroth, A.W. Bett
Temperature Dependent Electroluminescence and Voltages of Multi Junction Solar Cells

Keding_2BV.2.32
R. Keding, R. Bock, A. Bochow, K. Katkhouda, D. Stüwe, C. Reichel, F. Clement, R. Woehl, H. Reinecke, T. Geppert
Study of the Electrical Insulation of Dielectric Passivation Layers and Stacks for Back-Contact Back-Junction Silicon Solar Cells

Keding_2CO.3.5
R. Keding, D. Stüwe, M. Kamp, C. Reichel, A. Wolf, R. Woehl, D. Borchert, H. Reinecke, D. Biro
Co-Diffused Back-Contact Back-Junction Silicon Solar Cells

Keller_3DV.1.17
M. Keller, S. Reber, N. Schillinger, M. Arnold, D. Krogull, S. Hermann
Process Optimization and Solar Cells Results of ConCVD Epitaxial Layers

Kimmerle_2DV.3.6
E. Navarrete, A. Kimmerle, B. Thaidigsmann, R. Woehl, J.R. Ramos- Barrado, D. Biro
Evaluation of Fire- through Aluminum Pastes For Local Contact Formation In Silicon Solar Cells

Kimmerle_2CV.3.3
A.Blum, J. Swirhun, R.A. Sinton, A. Kimmerle
An Updated Analysis to the Wct- 120 Qsspc Measurement System Using Advanced Device Physics

Klimm_4AV.4.26
E. Klimm, T. Lorenz, K.-A. Weiß
Can Anti-Soiling Coating on Solar Glass Influence the Degree of Performance Loss of PV Modules over Time Drastically?

Krieg_2CV.4.56
A. Krieg, M. Tondorf, J. Greulich, S. Rein
Anti-Reflection-Coating Thickness Measurements on Textured Silicon Surfaces: Evaluation and Accuracy of Different Measurement Techniques

Kumm_2BV.2.24
J. Kumm, H. Samadi, P. Hartmann, S. Nold, A. Wolf, W. Wolke, S. Mack
Development of Temperature-Stable, Solderable PVD Rear Metallization for Industrial Silicon Solar Cells

Lohmüller_2BV.1.5
E. Lohmüller, S. Werner, J. Schön, M. Thanasa, S. Mack, W. Wolke, A. Wolf, F. Clement, D. Biro
Depletion of Boron-Doped Surfaces Protected with Barrier Layers during POCl3-Diffusion

Lorenz_2EO .2.6
A. Lorenz, A.Kalio, G. Hofmeister, S. Nold, A. Kraft, J. Bartsch, D. Wolf, M. Dreher, F. Clement, D. Biro
Flexographic Printing – High Through-Put Technology for Fine Line Seed_layer Printing on Silicon Solar Cells

Mack_2AO.3.3
S. Mack, A. Wolf, B. Thaidigsmann, E. Lohmüller, U. Jäger, M. Pospischil, F. Clement, D. Eberlein, R. Preu, D. Biro
Technology for Mass Production of >20% Efficient p-type Silicon Solar Cells

Meier_4AV.4.5
T. Meier, C. Peike, T. Kaltenbach, K.-A. Weiß
Changes of Morphology and Material Properties of Thin Ethylene-Vinyl Acetate-Films under Different Aging Conditions

Milenkovic_2BO.3.1
T. Rachow, N. Milenkovic, F. Heinz, M. Breitwieser , B. Steinhauser, S. Janz, S. Reber
Potential and Limitations of Epitaxial Emitters

Moldovan_2CV.4.48
A. Moldovan, M. Zimmer, J.Rentsch, B. Ferstel, S. Rajagopalan, S. Thate, M.R oss
A Novel Approach to High Performance and Cost Effective Surface Cleaning for High Efficiency Solar Cells

Mülhöfer_4DO.2.2
G. Mülhöfer, H. Berg, C. Ferrara, W. Grzesik, D. Philipp
Influence of Mechanical Load at Low Temperatures on Cell Defects and Power Degradation at Full Scale PV Modules

Nekarda_2BO.1.6
J. Nekarda, M. Graf, A. Rodofili, R. Preu, R. Böhme, D. Sontag
Laserbased foil-metallization for industrial PERC cells

Pavlovic_3DV.1.8
R. Pavlovic, S. Lindekugel, S. Janz, S. Reber
IntegRex- Process Development of a Module Interconnection Concept for Crystalline Silicon Thin Films

Peike_4CO.9.6
C. Peike, M. Hummel, K. Apin, M. Köhl, K.-A. Weiß
Spectral and Thermal Influence on the Photochemical Aging Behavior of Ethylene-Based PV Module Encapsulants

Pocza_3DV.1.18
D. Pocza, S. Reber, N. Schillinger, M. Arnold, D. Krogull, P. Barth, M. Keller
Comparison between Experimental Results and CFD Model Calculations for High-Throughout Continuous Silicon Chemical Vapour Deposition Epitaxy

Reich_5CO.6.1
A. Woyte, M. Richter, D. Moser, S. Mau, N. Reich, U. Jahn
Monitoring of Photovoltaic Systems: User Stories and Interpretation Guidelines

Richter_2CV.4.46
M. Richter, G. Kästner, J. Rentsch, M. Corda, A. Hain
A Novel Approach for Single Side Wet Chemical Polishing of crystalline Silicon Solar Cells

Saint-Cast_2BO.1.3
P. Saint-Cast, H. Nagel, S. Mack, D. Wagenmann, C. Reichel, M. Hofmann, J. Rentsch, R. Preu
Potential Induced Degradation: Understand and Avoid PID on the Cell Level

Samadi_2BV.2.14
H. Samadi, J. Kumm, D. Eberlein, P. Hartmann, A. Wolf, S. Mack
Comparison of Cleaning Processes for Enabling Solderability of PERC Silicon Solar Cells with Evaporated Aluminum Rear Side Metallization

Schindler_2CV.4.19
F. Schindler, B. Michl, J. Schön, W. Kwapil, W. Warta, M.C. Schubert
Material Limitations due to Crucible Impurities in Multicrystalline Silicon for High Efficiency Solar Cells

Schmid_2BV.3.27
C. Schmid, M. Schumann, F. Haas, S. Riepe
Influence of Argon Flow Rate on Melt Convection and Incorporation of SiC in Multicrystalline Silicon

Schmitt_ 4AV.6.41
P. Schmitt, T. Schmidt, M. Tranitz, S. Brachmann
Development of a Large Area Reference Cell Based on Modified C-SI-Module Technology

Seiffe_2BV.1.49
J. Seiffe, B. Bremen, S. Rappl, M. Hofmann, J. Rentsch
Two-Step Plasma Texturing for Industrial Solar Cell Manufacturing

Spribille_2BV.1.14
A. Spribille, E. Lohmüller, B. Thaidigsmann, A. Traeger, H. Nussbaumer, F. Clement, D. Biro
Wet Chemical Single-Side Emitter Etch Back for MWT Solar Cells with Al-BSF and Challenges for Via Paste Selection

Stecklum_4AV.6.64
D. Philipp, S. Stecklum, G. Mülhöfer
Improvement of Qualifying Testing by Using Statistical Evaluations of Measurement Data from Electroluminescence and Power Measurements

Steinhauser_2AO.1.3
B. Steinhauser, M. bin Mansoor, U. Jäger, J. Benick, M. Hermle
PassDop Based on Firing Stable a-SiNx:P as a Concept for the Industrial Implementation of n-type PERL Silicon Solar Cells

Thaidigsmann_2BV.1.18
B. Thaidigsmann, M. Hendrichs, M. Linse, S. Nold, E. Lohmüller, A. Wolf, F. Clement, D. Biro, R. Preu
p-Type MWT Solar Cells: Current Status and Future Expectations

Volk_2BV.1.1
A.K. Volk, Y. Fridkind, S. Gutscher, M. Zimmer, J. Rentsch
Laser Assisted Honeycomb-Texturing for Industrial Applications

Weiss_1AV.3.3
C. Weiss, M. Rumpel, M. Schnabel, P. Löper, S. Janz
Novel Silicon Nanocrystal Materials for Photovoltaic Applications