













- 2CV.2.29** D. Buzby  
Heraeus, Conshohocken, USA  
A.W. Dobie  
Sefar Printing Solutions, Lumberton, USA  
**Fine Line Screen Printing of Thick Film Pastes on Crystalline Silicon Solar Cells**
- 2CV.2.30** M. Ametowobla, S. Mohanan, T. Schlenker, E. Ams, K. U. Vayhinger & D. Manz  
Manz Automation, Reutlingen, Germany  
B.H. King  
Optomec, Albuquerque, USA  
**Aerosol Jet Printed Fine Line Metallization as Part of High Efficiency Solar Cell Concept**
- 2CV.2.31** M. Mühlbauer, V. Nguyen & R. Zapf-Gottwick  
University of Stuttgart, Germany  
**Improving Screen Printing Front Contacts by Predrying**
- 2CV.2.33** Y. Kato, H. Simoda, S. Senda & Y. Yoshino  
Noritake, Miyoshi, Japan  
T. Sugiyama & A. Murakami  
Noritake kizai, Miyoshi, Japan  
**Development of the Front-Side Conductor of a Lead-Free Silver Paste for Screen-Printed Silicon Solar Cells**
- 2CV.2.34** M. Hofmann, P. Saint-Cast, D. Suwito, J. Seiffe, C. Schmidt, S. Kambor, L. Gautero, N. Kohn, J. F. Nekarda, D. Wagenmann, D. Erath, S. Janz, D. Biro, A. Grohe, J. Rentsch, S.W. Glunz & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Overview on Crystalline Silicon Solar Cells Using PECVD Rear Passivation and Laser-Fired Contacts**
- 2CV.2.35** J. Hong, S. Navala, D. Wood, G. Okoniewski, X. Yang, R. Levasseur & M. Davies  
SiXtron, Dorval, Canada  
M.H. Kang, A. Ebong, B. Rounsaville & A. Rohatgi  
Georgia Institute of Technology, Atlanta, USA  
**Silane-Free PECVD Silicon Carbide (SiCx) and Silicon Carbon Nitride (SiCxNy) Dielectric Passivation Layers for High Efficiency Crystalline Silicon Solar Cells**
- 2CV.2.36** F. Einsele, W. Beyer & U. Rau  
Forschungszentrum Jülich, Germany  
**Thermal Stability of Sub-Stoichiometric Amorphous Silicon Oxide Layers for Crystalline Silicon Surface Passivation**
- 2CV.2.37** S. Janz, M. Peters, D. Suwito, M. Hermle & S.W. Glunz  
Fraunhofer ISE, Freiburg, Germany  
**Photonic Crystals as Rear-Side Diffusers and Reflectors for High Efficiency Silicon Solar Cells**
- 2CV.2.38** A. Richter, J. Benick, M. Hermle & S.W. Glunz  
Fraunhofer ISE, Freiburg, Germany  
**Amorphous Silicon Passivation Applied to the Front Side Boron Emitter of n-Type Silicon Solar Cells**

- 2CV.2.39** M. Hofmann, P. Saint-Cast, D. Bareis, D. Wagenmann, J. Rentsch & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Towards a-Si:H Rear Passivated Industrial Type Silicon Solar Cells**
- 2CV.2.40** S. Gloger, S. Riegel, B. Raabe & G. Hahn  
University of Konstanz, Germany  
**Investigation of the Backside Passivation Layer of Screen Printed Bifacial Silicon Solar Cells**
- 2CV.2.41** B.J. Hallam, B.S. Tjahjono & S. R. Wenham  
University of NSW, Sydney, Australia  
**Effect of PECVD Silicon Oxynitride Stoichiometry on the Surface Passivation of Silicon Wafers**
- 2CV.2.42** I. Cesar, E.E. Bende, G. Galbiati, N.J.C.M. Van Der Borg, A.W. Weeber & J.H. Bultman  
ECN, Petten, The Netherlands  
L. Janßen  
Solland Solar, Heerlen, The Netherlands  
**Parasitic Shunt Losses in All-Side SiNx Passivated mc-Si Solar Cell**
- 2CV.2.43** K.A. Münzer  
centrotherm photovoltaics technology, Konstanz, Germany  
**Hydrogenated Silicon Nitride for Regeneration of Light Induced Degradation**
- 2CV.2.44** J. Seiffe, D. Suwito, M. Hofmann, S. Janz, J. Rentsch & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Thermally Activated p- and n-Doped Passivation Layers**
- 2CV.2.45** J. Mitchell  
The Australian National University, Canberra, Australia  
**Surface Passivation of Multi-Crystalline Silicon by Multi-Layer Deposition of Hydrogenated Amorphous Silicon**
- 2CV.2.46** S. Mack, A. Wolf, A. Lemke, E. Wotke, B. Holzinger, D. Biro & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Impact of Solar Cell Manufacturing Processes on Thermal Oxide Passivated Surfaces**
- 2CV.2.47** D. Pysch, J.-P. Becker, M. Bivour, K. Zimmermann, C. Schetter, M. Hermle & S.W. Glunz  
Fraunhofer ISE, Freiburg, Germany  
**Comprehensive Study of Different PECVD-Sources for Deposition of Intrinsic Amorphous Silicon for Heterojunction Solar Cells**
- 2CV.2.48** T.C. Kho, L.E. Black & K.R. McIntosh  
The Australian National University, Canberra, Australia  
**Degradation of Si-SiO<sub>2</sub> Interfaces During Rapid Thermal Annealing**
- 2CV.2.49** S. Riegel, B. Raabe & G. Hahn  
University of Konstanz, Germany  
M.P. Stewart & P. Borden  
Applied Materials, Santa Clara, USA  
**Thermal Stability of PECVD a-Si<sub>1-x</sub>C<sub>x</sub> Layers for Crystalline Silicon Solar Cell Passivation**

Visual Presentations

- 2CV.2.50** S. Riegel, S. Gloger, B. Raabe & G. Hahn  
University of Konstanz, Germany  
**Comparison of the Passivation Quality of Boron and Aluminum BSF for Wafers of Varying Thickness**
- 2CV.2.51** A. Dastgheib-Shirazi, H. Haverkamp, F. Book, B. Raabe & G. Hahn  
University of Konstanz, Germany  
**Investigations of High Refractive Silicon Nitride Layers for Etched Back Emitters: Extended Surface Passivation for Selective Emitter Concept Cells (SECT)**
- 2CV.2.52** R. Cabal, V. Sanzone & Y. Veschetti  
CEA, Le Bourget du Lac, France  
J. Jourdan  
ISC Konstanz, Germany  
**Investigation of the Potential of Boron Doped Oxide Deposited by PECVD - Application to Advanced Solar Cells Fabrication Processes**
- 2CV.2.53** X. Loozen, P. Choulat, J. John, T. Conard, A. Franquet, G. Beaucarne & E. Van Kerschaver  
IMEC, Leuven, Belgium  
**Combined Effect of High Temperature Annealing and Hydrogenation of a Deposited Silicon Oxide for Si Surface Passivation**
- 2CV.2.54** R. Petres & V. Mihailetchi  
ISC Konstanz, Germany  
J. Maier & S. Keller  
centrotherm photovoltaics technology, Konstanz, Germany  
T. Pernau & P. Fath  
centrotherm, Blaubeuren, Germany  
**Silicon Surface Passivation by Industrial Low Frequency PECVD Films – Properties and Performance of SiCx and SiOxNy**
- 2CV.2.55** J. Larrieu, A. Soum-Glaude, L. Thomas, S. Quoizola & F. Massines  
CNRS-Promes, Perpignan, France  
**Use of Liquid Precursor TMS for Deposition of Antireflective and Passivating a-SiCx:H Thin Films with Low Pressure/Low Frequency PECVD**
- 2CV.2.56** J. Dupuis, E. Fourmond, M. Greffioz & M. Lemiti  
INL, Villeurbanne, France  
V. Mong-The Yen, O. Nichiporuk & N. Le Quang  
PHOTOWATT International, Bourgoin Jallieu, France  
**Study of Rear PECVD Dielectrics Stacks for Industrial Silicon Solar Cells**
- 2CV.2.57** C. Ehling, J.H. Werner & M.B. Schubert  
University of Stuttgart, Germany  
**Thermal Stable a-SiC:H Passivation Layers**
- 2CV.2.58** S. Wang, B. Tjahjono, B. Hallam, A. Sugianto, M. Eadie, L. Mai, Z. Hameiri & S. Wenham  
University of NSW, Sydney, Australia  
**The Use of Silicon Oxynitride on Laser Doped Multi-Crystalline Solar Cells**

Visual Presentations

- 2CV.2.59** J. Dupuis, J.-F. Lelièvre, E. Fourmond & M. Lemiti  
INL, Villeurbanne, France  
V. Mong-The Yen, O. Nichiporuk & N. Le Quang  
PHOTOWATT International, Bourgoin Jallieu, France  
**SiOxNy - SiNx Double Antireflection Layer for Mono and Multi-Crystalline Silicon Solar Cells**
- 2CV.2.60** M. George, H. Chandra & J. Madocks  
General Plasma, Tucson, USA  
R. Arhenkiel  
Colorado School of Mines, Golden, USA  
**N-Type and P-Type Emitter Surface Passivation by Remote PBS TM PECVD Technology**
- 2CV.2.61** A. Laades, J. Brauer, M. Blech, K. Lauer, U. Stürzebecher & A. Lawrenz  
CiS, Erfurt, Germany  
H. Angermann  
Helmholtz Centre Berlin for Materials and Energy, Germany  
**Wet Chemical Treatment of Solar Grade CZ Silicon Prior to Surface Passivation**
- 2CV.2.62** R. Mary Joy, M.H.L. van der Velden, V. Rudenkov, M.V. den Bekker-Tiba, R.C.M. Bosch & F.C. Dings  
OTB Solar, Eindhoven, The Netherlands  
M.C.M. van de Sanden  
Eindhoven University of Technology, The Netherlands  
**Investigation of PECVD Silicon Oxide for Industrial Solar Cells**
- 2CV.2.63** B. Chhabra & R.L. Opila  
University of Delaware, Newark, USA  
C.B. Honsberg  
Arizona State University, Tempe, USA  
**Very Low Surface Recombination Velocity on Silicon Substrates Passivated with Quinhydrone-Methanol (QHY-ME) Solution**
- 2CV.2.64** P. Saint-Cast, M. Hofmann, D. Wagenmann, J. Rentsch & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Firing Stable Passivation with a-Si/SiNx Stack Layer for Crystalline Silicon Solar Cells**
- 2CV.2.65** M. Syre, A. Holt & A. Palencsar  
Institute for Energy Technology, Kjeller, Norway  
**Surface Passivation of Silicon by Anodic Oxidation**
- 2CV.2.66** A.F. Stassen, M. Koppes, Y. Komatsu & A.W. Weeber  
ECN, Petten, The Netherlands  
J. Hoogboom, J. Oosterholt, S. Ritmeijer & L. Groenewoud  
Mallinckrodt Baker, Deventer, The Netherlands  
**Further Improvements in Surface Cleaning: Comparison of Different Post-PSG Cleans Suitable for Inline Emitters**
- 2CV.2.67** P. Lecouvreux, S. Quoizola & F. Massines  
CNRS-Promes, Perpignan, France  
M. Piro & R. Monna  
CEA, Le Bourget du Lac, France  
A. Madec  
Air Liquide, Jouy en Josas, France  
**Comparison between Atmospheric and Low Pressure PECVD SiNx:Hy Coatings for Photovoltaic Applications**

- 2CV.2.68** B.F.P. Roos, M.R. Huber, O. Hohn, T. Dippell & P. Binkowska  
Singulus Technologies, Kahl, Germany  
**SINGULAR – A Novel Inline PECVD-Deposition Concept for Silicon-Cell Production**
- 2CV.2.69** M. Solcansky, M. Machacek & J. Bousek  
Brno University of Technology, Czech Republic  
A. Poruba  
Solartec, Roznov pod Radhostem, Czech Republic  
**Chemical Passivation of a Silicon Surface for Minority Carrier Bulk-Lifetime Measurements**
- 2CV.2.70** M. Uhlig, D. Decker, M. Grimm & H. Schlemm  
Roth & Rau, Hohenstein-Ernstthal, Germany  
**In-line Plasma Clean Processes Prior the Deposition of Dielectric Antireflective and Passivation Layers on Crystalline Silicon Solar Cells**
- 2CV.2.71** N. Grant & K.R. McIntosh  
The Australian National University, Canberra, Australia  
**Surface Passivation Attained by Silicon Dioxide Grown at Low Temperature in Nitric Acid**
- 2CV.2.72** H. Nagayoshi, T. Ozaki & M. Higano  
Tokyo National College of Technology, Japan  
**Low Temperature Surface Passivation of Silicon by Using Perhydropolysilazane as a SiO<sub>2</sub> Source Material**
- 2CV.2.73** B. Dresler, J. Roch, B. Leupold, M. Leistner, W. Grähler, I. Dani, S. Kaskel & E. Beyer  
Fraunhofer IWS, Dresden, Germany  
M. Heintze & R. Möller  
centrotherm photovoltaics, Blaubeuren, Germany  
**Atmospheric Pressure Microwave PECVD of Silicon Nitride and Silicon Carbide**
- 2CV.2.74** S. Maeda, K. Furuichi, M. Dhamrin, M. Suda & K. Kamisako  
TUAT, Tokyo, Japan  
**RPECVD Hydrogenated Silicon Nitride Double Layer on n-Type Multicrystalline Silicon Solar Cells**
- 2CV.2.76** N. Batra, S. Kumar, M. Sharma & P.K. Singh  
National Physical Laboratory, New Delhi, India  
**Study of Chemical Passivation on Wet Oxidised Silicon Surface**
- 2CV.2.77** L. Lancellotti, F. Formisano, E. Bobeico, R. Fucci, P. Morvillo & F. Roca  
ENEA, Portici, Italy  
S. D'Aliento  
University of Naples "Federico II", Italy  
**Rapid Forming Gas Annealing for High Efficiency C-Si Solar Cells for Concentrating Systems**
- 2CV.2.78** M. Taguchi, Y. Tsunomura, H. Inoue, S. Taira, T. Nakashima, T. Baba, H. Sakata & E. Maruyama  
Sanyo Electric, Kobe, Japan  
**High Efficiency HIT Solar Cell on Thin (<100 µm) Silicon Wafer**
- 2CV.2.79** J. Lee, Z. Huang, X. Jiang, S. Sun, Y. Wang, G. Zhang & Z. Shi  
Suntech Power, Wuxi, China  
**Investigation of Properties of Gallium Doped Cz Monocrystal Silicon and Solar Cell**

- 2CV.2.80** G. Untila, T. Kost & A. Chebotareva  
Lomonosov Moscow State University, Russian Federation  
M. Zaks, A. Sitnikov & O. Solodukha  
SPF QUARK, Krasnodar, Russian Federation  
**High Efficiency c-Si Solar Cells with Transparent Electrodes and Gridlines of Wire**
- 2CV.2.81** G. Untila, T. Kost & A. Chebotareva  
Lomonosov Moscow State University, Russian Federation  
M. Zaks, A. Sitnikov & O. Solodukha  
SPF QUARK, Krasnodar, Russian Federation  
M. Z. Shvarts  
Ioffe Physico Technical Institute, St. Petersburg, Russian Federation  
**Low Concentration c-Si Solar Cells with Arc of TCO and Gridlines of Wire**
- 2CV.2.83** V. Vähänissi, A. Haarahiltunen, H. Talvitie, M. Yli-Koski, N. Lebedeva & H. Savin  
Helsinki University of Technology, Espoo, Finland  
**Effect of Iron on the Efficiency of Single Crystal Silicon Solar Cells**
- 2CV.2.84** K. Hirata, A. Ogane, T. Saitoh, A. Kitiyanan, E. Sugimura & T. Fuyuki  
NAIST, Ikoma, Japan  
**Optimization of CW Laser Doping in Crystalline Silicon Solar Cell Fabrication Process**
- 2CV.2.85** H.H. Kuehnlein, N. Kösterke, C. Cimiotti, E. Hartmannsgruber, N. Buerger & H. Nussbaumer  
RENA, Gütenbach, Germany  
A. Pauchard & B. Richerzhagen  
Synova, Ecublens, Switzerland  
F. Granek, K. Mayer, M. Mesec, M. Alemán & S. Hopman  
Fraunhofer ISE, Freiburg, Germany  
**Next Generation of Front Grid Metallization: LCP Selective Emitter Combined with Ni-Cu-Sn Direct Plating on Silicon**

## VISUAL PRESENTATIONS 1CV.3

## New Materials, Cells and Modules

- 1CV.3.2** T. Neff  
Bystronic Lenhardt, Neuhausen-Hamberg, Germany  
**New Encapsulation Solution for the PV Thin Film Industry**
- 1CV.3.3** F. Mesa, C. Calderón & G. Gordillo  
National University of Colombia, Bogotá, Colombia  
P. Bartolo-Peréz  
Cinvestav, Mérida, Mexico  
**Study of Cu<sub>3</sub>BiS<sub>3</sub> Thin Films Prepared by Co-Evaporation**
- 1CV.3.4** C. Tsao, J. Wong, P. Campbell, G.J. Conibeer, D. Song & M.A. Green  
University of NSW, Sydney, Australia  
**Structural and Electrical Properties of Hydrogenated Polycrystalline Germanium Thin Films Prepared by RF Magnetron Sputtering for Thin-Film Photovoltaics**

Visual Presentations

- 1CV.3.5** V.F. Gremenok & V. A. Ivanov  
National Academy of Sciences of Belarus, Minsk, Belarus  
D.M. Unuchak & K. Bente  
University of Leipzig, Germany  
I.S. Tashlykov & A.I. Turovets  
Belarusian State University, Minsk, Belarus  
**Characterization of Hot Wall Deposited PbS-SnS Thin Films**
- 1CV.3.6** S. Perraud, S. Poncet, S. Noël, M. Levis, P. Faucherand & E. Rouviere  
CEA, Grenoble, France  
P. Thony, C. Jaussaud & R. Delsol  
CEA, Le-Bourget-du-Lac, France  
**Optimization of the Front Electrical Contact of Silicon Nanowire Array Solar Cells**
- 1CV.3.7** P. Chabrecek  
Sefar, Thal, Switzerland  
**New Fabric Based Electrodes/Substrates for Advanced Solar Cells**
- 1CV.3.8** R. Strandberg & T. W. Reenas  
NTNU, Trondheim, Norway  
**Photofilling of Intermediate Bands**
- 1CV.3.9** P. Poodt, J. van Deelen, T. van Mol, K. Spee, F. Grob & A. Kuypers  
TNO Science and Industry, Eindhoven, The Netherlands  
**The Development of High Quality Transparent Conductive Oxide APCVD Processes for Photovoltaic Applications**
- 1CV.3.10** E.P. Zaretskaya, V.F. Gremenok, V.A. Ivanov, V.B. Zalesski, B.I. Kovalevski & P.I. Romanov  
National Academy of Sciences of Belarus, Minsk, Belarus  
**Physical Properties of Polycrystalline SnS Thin Films for Solar Cells**
- 1CV.3.11** J. Spanring, A. Droisner, B.R. Erler, M. Kraxner, W. Krumlacher, A. Plessing, A. Ruplitsch, A. Skringer & A. Steiner  
ISOVOLTA, Werndorf, Austria  
**High Performance Barrier Films for Flexible Solar Cell Encapsulation**
- 1CV.3.13** M. Rothfelder, M. Peters, M. Künle, B. Bläsi & S. Janz  
Fraunhofer ISE, Freiburg, Germany  
**Using Spectroscopic Ellipsometry for the Characterisation of Thin Films for Advanced Photovoltaic Concepts**
- 1CV.3.14** J. Montero & J. Herrero  
CIEMAT, Madrid, Spain  
**Preparation of Reactively Sputtered SnO<sub>2</sub>:Sb Electrodes with the Application of TiO<sub>2</sub> Layers**
- 1CV.3.15** A. Hovestad & M.K.P. Van Neer  
TNO, Eindhoven, The Netherlands  
**Transparent High-Conductivity Interconnect Grids for Solar**
- 1CV.3.16** F. Schwager, C. Neumann & G. Seyoum  
Evonik Degussa, Hanau, Germany  
**New Polymer Film Materials for the Encapsulation of Thin Film PV Cells**

Visual Presentations

- 1CV.3.17** H.H. Kuehnlein, N. Kösterke, G. Cimiotti, E. Hartmannsgruber, N. Buerger & H. Nussbaumer  
RENA, Gütenbach, Germany  
D. Luetke-Notarp & M. Becker  
NB-Technologies, Bremen, Germany  
**>0.4% Absolut Efficiency Gain by Fast Ni-Cu-Sn Electroplating of Solar Cells with Fine Line Printed Contacts by a Single Side Wet Treatment Technology**
- 1CV.3.18** H. Muckenhuber, B. Erler, R. Eugen, M. Feichtner, D. Hütter, M. Kraxner, W. Krumlacher, A. Plessing, A. Reininger, A. Ruplitsch, A. Skringer & A. Steiner  
ISOVOLTA, Werndorf, Austria  
**Encapsulation of PV-Modules – New Materials for Efficient Protection**
- 1CV.3.19** C. Polenzky, S. Ulrich & B. Szyszka  
Fraunhofer IST, Braunschweig, Germany  
R. Bywalez, S. Götzendörfer & P. Löbmann  
Fraunhofer ISC, Würzburg, Germany  
**Transparent p-conducting Materials for Application in Highly Efficient Thin Film Solar Cells**
- 1CV.3.20** D. Jousset & S. Bizet  
Arkema France, Serquigny, France  
**New Thermoplastic Encapsulants for Photovoltaic Modules Based on Nano-Structured Copolymers**
- 1CV.3.21** E. Roman, J.M. Campos, F. Cano, R. Alonso, M. Machado, A. Amundarain, A. Pereda, A. Sanz, I. Arrizabalaga, O. Zubillaga & M. Rips  
Tecnalia, Zamudio, Spain  
J. Nakata, K. Taira, S. Imoto, I. Inagawa, S. Ohtani & H. Nakamura  
KYOSEMI, Hokkaido, Japan  
**Smart BIPV Glass-Glass Curtain Wall Based on Sphelear® Technology**
- 1CV.3.22** F.I. Ezema, S.C. Ezugwu, A.B.C. Ekwealor, P.U. Asogwa, R.U. Osuji & S.N. Agbo  
University of Nigeria, Nsukka, Nigeria  
**Synthesis and Characterization of CdS/PbS and CdS/TIS Thin Films Grown in a Polymer Matrix by Chemical Bath Deposition (CBD) Method**
- 1CV.3.23** B. Szyszka, S. Ulrich & C. Polenzky  
Fraunhofer IST, Braunschweig, Germany  
P. Löbmann & S. Götzendörfer  
Fraunhofer ISC, Würzburg, Germany  
A. Georg  
Fraunhofer ISE, Freiburg, Germany  
D. Borchert  
Fraunhofer ISE, Gelsenkirchen, Germany  
C. Elsässer & W. Körner  
Fraunhofer IWM, Freiburg, Germany  
C. May  
Fraunhofer IPMS, Dresden, Germany  
**A Multidisciplinary Approach towards Novel Conductive Electrodes for PV Applications**
- 1CV.3.24** X. Lu, S.R. Huang, Y. Wang, X. Wang, R. Opila & A. Barnett  
University of Delaware, Newark, USA  
**High Performance Multi-Junction Solar Cells Fabricated By Liquid Phase Epitaxy**

Visual Presentations

- 1CV.3.25** V.D. Falcão, M.E.L. Sabino, D.O. Miranda & J.R.T. Branco  
 CETEC, Belo Horizonte, Brazil  
**Fabrication and Characterization of ZnO:Al TCO Thin Films by Electron Beam Evaporation Technique with Argon Plasma Assistance**
- 1CV.3.26** F. Bergmann, A. Schadewald & A. Rapphel  
 Institut für Kunststofftechnologie und -recycling, Weißenstein-Görlau, Germany  
**Application-Technological Development of Innovative PO-Plastisols for the Production of Photovoltaic Modules**
- 1CV.3.29** V.A. Sivakov, A. Gawlik, G. Andrä, F. Falk, A. Berger & S.H. Christiansen  
 IPHT, Jena, Germany  
**3rd Generation Solar Cell Prototype Based on Chemically Formed Silicon Nanowires: Processing, Optical and Photovoltaic Properties**
- 1CV.3.31** S. Polizzi, P. Riello & I. Freris  
 Ca'Foscari Venice University, Italy  
 R. Riccò, A. Patelli & F. Enrichi  
 CIVEN-NanoFab, Venice, Italy  
 A. Le Donne, M. Acciarri & S. Binetti  
 University of Milan - Bicocca, Italy  
 B. Rowan & B.S. Richards  
 Heriot-Watt University, Edinburgh, United Kingdom  
**Improving Silicon Solar Cells' Efficiency by Down Shifting of Organo-Lanthanide Complexes**
- 1CV.3.32** A.S. Vlasov, V.P. Khvostikov, E.P. Rakova, S.V. Sorokina & V.M. Andreev  
 Ioffe Physico Technical Institute, St. Petersburg, Russian Federation  
**Photoluminescence Characterization of Te-Doped GaSb for TPV Applications**
- 1CV.3.33** S. Mukhopadhyay, L. Dankers, Y. Pandey, P. Lu, T. Nguyen, A. Bhanap, A. Wragg, C. Chen & N. Rutherford  
 Honeywell Electronic Materials, Sunnyvale, USA  
**New Solar Cover Glass Anti-Reflective Coatings for Improved Light Management**
- 1CV.3.35** C. Summonte, E. Centurioni & A. Desalvo  
 CNR-IMM, Bologna, Italy  
 S. Mirabella, F. Simone & A. Terrasi  
 University of Catania, Italy  
 M.A. Di Stefano, S. Di Marco, S. Ravesi & S. Lombardo  
 STMicroelectronics, Catania, Italy  
**Optical Properties of Silicon Nanoparticles for Photovoltaic Applications**
- 1CV.3.36** F. Buatier de Mongeot, C. Boragno, A. Toma & D. Chiappe  
 University of Genova, Italy  
 P. Delli Veneri, L. V. Mercaldo & C. Privato  
 ENEA, Portici, Italy  
**Plasmon Enhanced Thin Film PV Devices on Nanostructured Metallo-Dielectric Substrates**
- 1CV.3.37** R. Sewell, A. Clark, R. Smith, S. Semans, A. Jamora & G. Vosters  
 Translucent, Palo Alto, USA  
**Epitaxial Rare-Earth Oxide Materials Grown on Silicon Solar Cells for Spectral Conversion of Sunlight**

Visual Presentations

- 1CV.3.39** T. Nychyporuk & M. Lemiti  
 INL, Villeurbanne, France  
 I.I. Ivanov & V.A. Skryshevsky  
 National Taras Shevchenko University, Kiev, Ukraine  
**Porous Silicon Bragg Rear Reflectors for Thin Silicon Solar Cells**
- 1CV.3.40** S. Fahr, C. Rockstuhl & F. Lederer  
 Friedrich-Schiller University of Jena, Germany  
**Metallic Nanoparticles as Efficient Intermediate Reflectors in aSi:H- $\mu$ cSi Solar Cells**
- 1CV.3.41** M. Pravettoni & R. P. Kenny  
 European Commission DG JRC, Ispra, Italy  
 D.J. Farrell, A.J. Chatten, R. Bose & K.W.J. Barnham  
 Imperial College London, United Kingdom  
**External Quantum Efficiency Measurements of Luminescent Solar Concentrators: a Study of the Impact of Backside Reflector, Bias Light and Temperature**
- 1CV.3.42** L. H. Slooff, E.E. Bende & T. Budel  
 ECN, Petten, The Netherlands  
**The Non-Fluorescent Flat Plate Solar Concentrator**
- 1CV.3.44** R. Rajan, K. Mukherjee, T.H. Teng, A. Le Viet & S. Ramakrishna  
 National University of Singapore, Singapore  
**Excitonic Solar Cells from Electrospun Metal Oxide Nanofibers**
- 1CV.3.45** B. Rowan & B.S. Richards  
 Heriot-Watt University, Edinburgh, United Kingdom  
 N. Robertson, A. Jones, O. Moudam & M. Alamiry  
 University of Edinburgh, United Kingdom  
**Visible and Near-Infrared Emitting Lanthanide Complexes for Luminescent Solar Concentrators**
- 1CV.3.46** J. de Wild, A. Meijerink, J. Rath, W.G.J.H.M. van Sark & R.E.I. Schropp  
 University of Utrecht, The Netherlands  
**Cell Concept for Thin Film a Si:H Solar Cells Including Photon Upconversion**
- 1CV.3.47** K. Baumgartner & R. Carius  
 Forschungszentrum Jülich, Germany  
 O. Angelov, M. Sendova-Vassileva & D. Dimova-Malinovska  
 Bulgarian Academy of Sciences, Sofia, Bulgaria  
**Optical Properties of Magnetron Sputtered Thin Dielectric Films Containing Tb<sup>3+</sup> for Spectral Conversion in Thin Film Solar Cells**
- 1CV.3.48** R. Bose, A.J. Chatten & K.W.J. Barnham  
 Imperial College London, United Kingdom  
 M. Pravettoni  
 European Commission DG JRC, Ispra, Italy  
**Luminescent Solar Concentrators: Characterisation and Modelling**
- 1CV.3.49** S. Brunken & K. Ellmer  
 Helmholtz Centre Berlin for Materials and Energy, Germany  
**Tungsten Disulfide (WS<sub>2</sub>) Layers, Prepared by an Amorphous Solid-Liquid-Crystalline Solid Process as Absorbers for Thin Film Solar Cells**
- 1CV.3.50** G. Kocher-Oberlehner, B.S. Richards & J.I.B. Wilson  
 Heriot-Watt University, Edinburgh, United Kingdom  
**Photonic Crystal Layers to Enhance Solar Cell Efficiency**

Visual Presentations

- 1CV.3.51** M.H. Kang, A. Ebong, B. Rounsaville & A. Rohatgi  
Georgia Institute of Technology, Atlanta, USA  
J. Hong  
SiXtron Advanced Materials, Quebec, Canada  
**Optimization of Silane Free PECVD SiC<sub>x</sub>N<sub>y</sub> as Passivation and Antireflection Coating of Silicon Solar Cell**
- 1CV.3.53** M.G. Debije, M.P. Van, P.C. Verbunt, D. J. Broer & C.W.M. Bastiaansen  
Eindhoven University of Technology, The Netherlands  
**The Effect of an Organic Selectively-Reflecting Mirror on the Performance of a Luminescent Solar Concentrator**
- 1CV.3.54** S. Tsoi, C.W.M. Bastiaansen & M.G. Debije  
Eindhoven University of Technology, The Netherlands  
**Enhancing Light Output of Fluorescent Waveguides with a Microlens System**
- 1CV.3.55** J. Quilitz  
Fraunhofer IPA, Potsdam, Germany  
L. H. Slooff  
ECN, Petten, The Netherlands  
L. Manna & A. Fiore  
NNL, Lecce, Italy  
T. Meyer  
Solaronix, Aubonne, Switzerland  
D. Farrell  
Imperial College London, United Kingdom  
R. Koole  
University of Utrecht, The Netherlands  
**Fabrication and Characterisation of Nanorod and Quantum Dot Solar Concentrators**
- 1CV.3.56** P.P.C. Verbunt, C.W.M. Bastiaansen & M.G. Debije  
Eindhoven University of Technology, The Netherlands  
**The Effect of Dyes Aligned by Liquid Crystals on Luminescent Solar Concentrator Performance**
- 1CV.3.58** M. Zettl, O. Stern, M. Hartung, M. Lynass, E. Bernal Serra & O. Mayer  
GE Global Research, Garching, Germany  
**Characterization of Dye Doped Polycarbonate Sheets for the Use in a Fluorescent Solar Concentrator**
- 1CV.3.59** L. Prönneke & Y. Uslu  
University of Stuttgart, Germany  
J.C. Goldschmidt  
Fraunhofer ISE, Freiburg, Germany  
U. Rau  
Forschungszentrum Jülich, Germany  
**Measurement and Simulation of Enhanced Photovoltaic Systems with Fluorescent Concentrators**
- 1CV.3.60** P. Aliberti, S.K. Shrestha, R. Teuscher, M.A. Green & G.J. Conibeer  
University of NSW, Sydney, Australia  
**Investigation of Silicon Energy Selective Contacts for Hot Carriers Solar Cells**

Visual Presentations

- 1CV.3.61** B. He, Z.Q. Ma, L. Zhao, F. Li, C. Shen, N.S. Zhang, Z.S. Yu & Y.T. Yin  
University of Shanghai, China  
J. Xu  
WuHan University of Technology, China  
**Violet-enhanced Solar Cell Based on SINP Structure**
- 1CV.3.62** B. Berghoff, S. Suckow, R. Rölver, B. Spangenberg & H. Kurz  
RWTH Aachen, Germany  
**Si/SiO<sub>2</sub> Quantum Well Solar Cells Based on Lateral Charge Carrier Transport**
- 1CV.3.63** L.B. Karlina, M.M. Kulagina, N.H. Timoshina, A. S. Vlasov & E.P. Rakova  
Ioffe Physico Technical Institute, St. Petersburg, Russian Federation  
**Phosphorus Diffusion from Localized Source for GaAs-Ge Solar and Thermophotovoltaic Applications**
- 1CV.3.64** D. Dimova-Malinovska, P. Andreev, M. Sendova-Vassileva, H. Nichev & K. Starbova  
Bulgarian Academy of Sciences, Sofia, Bulgaria  
**Preparation of ZnO Nanowires by Electrochemical Deposition**
- 1CV.3.66** T. Nychporuk, B. Rézgui, G. Brémond & M. Lemiti  
INSA Lyon, Villeurbanne, France  
**Monodispersed Single-Phase Nanocrystalline Silicon Films for all-Si Tandems**
- 1CV.3.67** H. Lam, Z. Chen, C.P. Chan & C. Surya  
Hong Kong Polytechnic University, China  
**Growth and Characterization of Copper Indium Disulfide nano-rods Using Anodized Aluminum as the Growth Mask**
- 1CV.3.68** Y. Kurokawa, S. Tomita, S. Miyajima, A. Yamada & M. Konagai  
Tokyo Institute of Technology, Japan  
**Effects of Nitrogen on the Electrical Properties of Si Quantum Dots Superlattice Using a-SiC Matrix**
- 1CV.3.69** V. Bellido-González, B. Daniel, M. Holik & D. Monaghan  
Gencoa, Liverpool, United Kingdom  
**Industrial Control of AZO Deposition by Magnetron Sputtering**
- 1CV.3.70** J. Ball & H.S. Reehal  
London South Bank University, United Kingdom  
**The Influence of Si Substrate Orientation on Au Catalyst Formation for Si Nanowire Growth**
- 1CV.3.71** D. Maestre  
UCM, Madrid, Spain  
J. Le Rouzo, D. Barakel, O. Palais, L. Escoubas, C. Alfonso & L. Charrin  
University of Aix-Marseille, France  
**Growth and Characterization of Si Nanowires by an Electroless Etching Process**
- 1CV.3.72** L. V. Mercaldo, P. Delli Veneri, E. Esposito & C. Privato  
ENEA, Portici, Italy  
**Silicon Quantum Dots in Silicon Nitride for Thin Film Innovative Photovoltaics**

- 1CV.3.73** B. Rézgui, T. Nychporuk, A. Sibai, A. Poncet, M. Lemiti & G. Brémond  
INSA Lyon, Villeurbanne, France  
D. Bellet  
Grenoble Institute of Technology, France  
D. Maestre & O. Palais  
University of Aix-Marseille, France  
**A Route toward the Optimized Optical and Electrical Properties of Si Quantum dots/SiNx Composite Structures for Third Generation Solar Cell Applications**
- 1CV.3.74** D. Meissner, E. Melikov, M. Altosaar, J. Raudoja, T. Varemaa, A. Jagomägi, J. Krustok, M. Kauk, K. Ernits, K. Timmo, K. Muska, M. Danilson, M. Grossberg, O. Volobueva & M. Pilvet  
TUT, Tallinn, Estonia  
T. Badegruber, W. Ressler & F. Lehner  
Crystalsol OÜ, Tallinn, Estonia  
**Crystalsol's CZTS Monograin Photovoltaics**
- 1CV.3.75** G. Andrä, M. Pietsch, T. Stelzner, S. Christiansen & F. Falk  
IPHT, Jena, Germany  
**Thin Film Solar Cells Based on Single Crystalline Silicon Nanowires**
- 1CV.3.76** I.Y. Maronchuk  
Sevastopol National University, Ukraine  
N.I. Berezovska, O.Y. Borkovska, I. Mamontova, S. Mamykin & A.I. Maronchuk  
National Academy of Science, Kiev, Ukraine  
S.Y. Bykovski & T.F. Kulyutkina  
SNUNEI, Sevastopol, Ukraine  
I.I. Maronchuk  
SIRM, Moscow, Russian Federation  
**Nanoheteroepitaxial Structures on the Basis of GaP for Solar Cells**
- 1CV.3.77** A. Gencer Imer, I. Yildiz & R. Turan  
Middle East Technical University, Ankara, Turkey  
**Fabrication and Characterization of Si Nanocrystals Embedded in SiC matrix by Magnetron Sputtering for Third Generation Solar Cell Application**
- 1CV.3.78** S. Lombardo, M.A. Di Stefano, S. Lorenti, S. Di Marco, M. Camalleri, S. Ravesi & S. Coffa  
STMicronics, Catania, Italy  
R. Puglisi, G. Mannino, D. Corso, C. Vecchio, V. Privitera, C. Bongiorno, G. Nicotra & C. Spinella  
CNR-IMM, Catania, Italy  
C. Summonte  
CNR-IMM, Bologna, Italy  
S. Mirabella, I. Crupi, G. Franzo, R. Agosta, F. Simone & A. Terrasi  
University of Catania, Italy  
**Si Quantum Dots for Photovoltaic Cells**
- 1CV.3.80** S.E. Ivanova  
University of Information Technology, St. Petersburg, Russian Federation  
C. Andria & F. Pellé  
CNRS, Paris, France  
J.F. Guillemoles  
CNRS, Chatou, France  
G.J. Conibeer  
University of NSW, Sydney, Australia  
**Efficient Upconverters for Si Photovoltaics**

- 1CV.3.81** B. Puthen Veetil, D. König, M.A. Green & G.J. Conibeer  
University of NSW, Sydney, Australia  
**Theoretical Analysis of Energy Selective Contacts with Si QDs In SiO2 Matrix and SiC Barriers Using a 2 Dimensional Model**
- 1CV.3.82** M.R. Aguiar & R. Caram  
State University of Campinas, Brazil  
**SnSe-SnSe2 in Situ Composites: a Potential Material for Photovoltaic Applications**
- 1CV.3.83** A. Le Bris & J.F. Guillemoles  
CNRS, Chatou, France  
M. Laroche, R. Esteban & J.J. Greffet  
Ecole Centrale Paris, Chatenay-Malabry, France  
P. Christol  
University of Montpellier, France  
P. Aschehoug & S. Ivanova  
University Pierre & Marie Curie, Paris, France  
**Hot Carrier Solar Cell: From Efficiency Simulation to Hot Carrier Detection by Photoluminescence**
- 1CV.3.84** D. Guimard, D. Bordel, R. Morihara, M. Nishioka & Y. Arakawa  
University of Tokyo, Japan  
**Growth of InAs/GaAs Quantum Dot Solar Cells by MOCVD without Degradation of Open Circuit Voltage**
- 1CV.3.86** E.W. Kazarian, S.L. Tsharkyan & H.G. Naserranjbar  
State Engineering University of Armenia, Yerevan, Armenia  
**Electrosynthesis of Semiconducting Polymers and Coatings for PV-Cell**
- 1CV.3.87** U. Keller  
Kuraray Europe, Troisdorf, Germany  
**Advantages of Advanced SOLAR PVB-Film for the Encapsulation of Thin Film Modules**
- 1CV.3.88** V.I. Laptev & G. Laptev  
University of Stuttgart, Germany  
H.M. Khlyap  
University of Kaiserslautern, Germany  
**Dark Current in Metallic Contact**
- 1CV.3.89** P. Löper, A. Hartel, M. Künle, S. Janz, M. Hermle & S.W. Glunz  
Fraunhofer ISE, Freiburg, Germany  
D. Hiller & M. Zacharias  
IMTEK, Freiburg, Germany  
**Silicon Quantum Dot Absorber Layers for all-Silicon Tandem Solar Cells:Optical and Electrical Characterisation**

**VISUAL PRESENTATIONS 1CV.4****Fundamental Studies**

- 1CV.4.1** Z.Q. Ma  
University of Shanghai, China  
**Band Gap of Nano-crystalline Semiconductor in Hybrid Electronic States**
- 1CV.4.2** R. Macku, P. Koptavy & P. Skarvada  
Brno University of Technology, Czech Republic  
**Innovative Electric Model of n+p Silicon Solar Cells**
- 1CV.4.3** G. Puneyani, P. Goswami & A. Kapoor  
University of Delhi, New Delhi, India  
**Theoretical Investigation of GaAs based Solar Cell with Excitonic Involvement**
- 1CV.4.6** A.S. Kavasoglu, N. Kavasoglu, O. Pakma & S. Oktik  
University of Mugla, Turkey  
**Energy Barrier Calculations for p-i-n Solar Cells in Dark and under Illumination Using a Computer Algorithm Developed at Mugla University**
- 1CV.4.7** U. Aeberhard  
Forschungszentrum Jülich, Germany  
**Microscopic Theory of Absorption and Emission in Nanostructured Solar Cells: Beyond the Generalized Planck Formula**
- 1CV.4.9** L. Abenante  
ENEA, Rome, Italy  
**Lambertian Modeling of Quantum Efficiency and Reflectance of Si Solar Cells**
- 1CV.4.10** L. Abenante  
ENEA, Rome, Italy  
**Effective Optical Path Length Factor of the Light Escaping out the Front Surface of a Si Solar Cell**
- 1CV.4.11** L. Hirst & N.J. Ekins-Daukes  
Imperial College London, United Kingdom  
**Solar Cells as Heat Engines: Thermodynamic Analysis of Multi-Junction Cells**
- 1CV.4.12** A. Centeno  
Euspen, Cranfield, United Kingdom  
S.M.B. Ahmed & H. Reehal  
London South Bank University, United Kingdom  
J. Breeze  
Imperial College, London, United Kingdom  
**Predicting the Enhancement of Field Coupling into Silicon by Metallic Nanoparticles**
- 1CV.4.14** M.M. Dione, M.L. Samb, M. Thiame, S. Ndoye, F.I. Barro & G. Sissoko  
University of Cheikh Anta Diop, Dakar, Senegal  
**Vertical Junction Under Constant Multispectral Light: Determination of Recombination Parameters**

- 1CV.4.15** N. Thiam, M. Ndiaye, A.S. Maiga, I. Ly, F.I. Barro & G. Sissoko  
University of Cheikh Anta Diop, Dakar, Senegal  
**Recombination Parameters Measurement of Silicon Solar Cell Under Constant White Biase Light**
- 1CV.4.16** A. Dieng, M. Ndiaye, M.L. Samb, M. Thiame, F.I. Barro & G. Sissoko  
University of Cheikh Anta Diop, Dakar, Senegal  
**3D Study of a Polycrystalline Silicon Solar Cell: Influence of Applied Magnetic Field on the Electrical Parameters**
- 1CV.4.17** T. Weber & M. Kutzer  
SolarWorld Innovations, Freiberg, Germany  
**Dark IV Curve Measurement of Single Solar Cells in Photovoltaic Modules Using Electroluminescence Imaging**
- 1CV.4.18** P. Goswami, G. Puneyani & A. Kapoor  
University of Delhi, New Delhi, India  
**Investigation of Optical Absorption in a Quantum Dot and Photovoltaic Application**
- 1CV.4.19** P. Skarvada, P. Tomanek & R. Macku  
Brno University of Technology, Czech Republic  
**Near-Field Photoelectric Measurement of Si Solar Cells**
- 1CV.4.20** R. Macku, P. Koptavy & P. Skarvada  
Brno University of Technology, Czech Republic  
**Improved Electrical Characterization of Silicon Solar Cells Based on Noise Spectroscopy in Forward Direction**
- 1CV.4.21** A. Braun, B. Hirsch, E. Katz & J. Gordon  
Ben-Gurion University, Sede Boqer Campus, Israel  
W. Guter & A. W. Bett  
Fraunhofer ISE, Freiburg, Germany  
**Localized Irradiation Effects on Tunnel Diode Transitions in Multi-Junction Concentrator Solar Cells**
- 1CV.4.22** R. Seitz  
Horiba Jobin Yvon, Unterhaching, Germany  
R. Geiger  
Horiba Jobin Yvon, Bensheim, Germany  
E. Leroy  
Horiba Jobin Yvon, Edison, USA  
**Characterization of Thin Films in Solar Cells with Complimentary Spectroscopic Methods**
- 1CV.4.23** J. Tan, A. Cuevas & D. Macdonald  
The Australian National University, Canberra, Australia  
**A Novel Method for Determining Majority Carrier Mobility in p-type Multi-Crystalline Silicon**
- 1CV.4.24** I. Perez-Wurfl, A. Gentle, X.J. Hao, M.A. Green, G.J. Conibeer & D.H. Kim  
University of NSW, Sydney, Australia  
**Determination of Electronic Bandgap of Silicon Rich Oxide Films Using Temperature Dependent Diode IV Measurements**

- 1CV.4.25** T. Nychporuk, G. Brémond & M. Lemiti  
INSA Lyon, Villeurbanne, France  
C. Eypert & J. P. Gaston  
Horiba Jobin Yvon, Chilly-Mazarin, France  
**Structural Characterization of Monodispersed Single-Phase nc-Si:H Films by Spectroscopic Ellipsometry and Raman Spectroscopy**
- 1CV.4.26** J. Vanek, M. Lunak, Z. Chobola & J. Dolenský  
Brno University of Technology, Czech Republic  
**Application of Noise Spectroscopy to Assessing the Quality of New Solar Cells Designed for Concentrator Systems**
- 1CV.4.27** A. Vesely, J. Vanek, J. Kazelle & R. Barinka  
Brno University of Technology, Czech Republic  
**Temperature Dependence of Photoluminescence Imaging**
- 1CV.4.28** A. Vesely, J. Vanek, K. Jandova & J. Dolenský  
Brno University of Technology, Czech Republic  
R. Barinka  
Solartec, Roznov pod Radhostem, Czech Republic  
**Analysis of Back Side Contact Imaging Phenomenon in LBIC**
- 1CV.4.29** N. Kavasoglu, A.S. Kavasoglu, O. Pakma & S. Oktik  
University of Mugla, Turkey  
**Intensity Modulated Photocurrent Spectroscopy for Porous Si and Cu (Inx,Ga1-x) Se2 Solar Cells**
- 1CV.4.30** M. Blech, A. Laades & A. Lawerenz  
CiS, Erfurt, Germany  
C. Ronning, B. Schröter & C. Borschel  
Friedrich-Schiller University of Jena, Germany  
D. Rzesanke  
University of Technology Ilmenau, Germany  
**Detailed Study of PECVD Silicon Nitride and Correlation of Various Characterization Techniques**
- 1CV.4.31** N. Szabó, B.E. Sagol, U. Seidel, C. Hoehn, M. Kunst, K. Schwarzburg & T. Hannappel  
Helmholtz Centre Berlin for Materials and Energy, Germany  
**Minority Carrier Lifetime of InGaAsP and InGaAs Absorbers for Low Bandgap Tandem Solar Cells**
- 1CV.4.32** M. Bosi, G. Attolini, M. Calicchio, C. Ferrari & E. Gombia  
IMEM-CNR Institute, Parma, Italy  
**A Study of Surface Passivation Layers for Homoepitaxial Germanium Cells for Photovoltaic and Thermophotovoltaic Applications**
- 1CV.4.33** J. Carstensen, A. Abdollahinia, A. Schütt & H. Föll  
University of Kiel, Germany  
**Characterization of the Grid Design by Fitting of the Distributed Serial Grid Resistance to CELLO Resistance Maps and Global IV Curves**
- 1CV.4.34** A. Slaoui & F. Delachat  
CNRS-InESS, Strasbourg, France  
A. En Naciri & A.S. Keita  
University of Metz, France  
J. P. Gaston & M. Kloul  
Horiba Jobin Yvon, Chilly-Mazarin, France  
**Spectroscopic Ellipsometry Characterization of Silicon-rich Silicon Nitride Layers for Photovoltaic Applications**

- 1CV.4.35** J.C. Denis, F. Lmai, A. Darga & D. Mencaraglia  
CNRS, Gif-sur-Yvette, France  
**Assessment of Solar Cell Parameters Extraction Methods through Temperature Dependent Current-Voltage Measurements**
- 1CV.4.36** J. L. Balenzategui, I. Rodríguez-Outón & F. Chenlo Romero  
CIEMAT, Madrid, Spain  
**Factors Affecting the Spectral Match Classification of Continuous Solar Simulators**
- 1CV.4.37** K.J. Weber, H. Jin & W.E. Jellett  
The Australian National University, Canberra, Australia  
**Surface Passivation Using Dielectric Films: How Much Charge is Enough?**
- 1CV.4.39** N. Kalyuzhnyy, V. Lantratov, S.A. Mintairov, M.A. Mintairov & M. Z. Shvarts  
Ioffe Physico Technical Institute, St. Petersburg, Russian Federation  
**Investigations of Photovoltaic Devices Crystallization in MOCVD with In-Situ Monitoring**
- 1CV.4.40** S. Suckow, B. Berghoff, B. Spangenberg & H. Kurz  
RWTH Aachen, Germany  
**Comparison of Measurement and Simulation of Charge Transport in Selective Energy Contacts Based on Si Quantum Dots**
- 1CV.4.42** O. El Daif, E. Drouard, X. Letartre & C. Seassal  
INSA Lyon, Ecully, France  
Y. Park, A. Fave, A. Kaminski, M. Lemiti & P. Viktorovitch  
INSA Lyon, Villeurbanne, France  
S. Ahn & H. Jeon  
Seoul National University, Republic of Korea  
**Photonic Crystal Enhanced Absorption of Amorphous Silicon for Solar Cells**
- 1CV.4.43** D. Krefßner-Kiel, T. Dörschel, F. Dreckschmidt, S. Würzner, T. Kaden & H. J. Möller  
TU Bergakademie Freiberg, Germany  
M. Bellmann & L. Arnberg  
NTNU, Trondheim, Norway  
**Structural and Electronic Properties of Germanium-doped Multicrystalline Silicon**
- 1CV.4.45** A. Fejfar  
Academy of Sciences of the Czech Republic, Prague, Czech Republic  
**Curve Template for the I-V Characteristics of the Solar Cells**
- 1CV.4.46** K. Sánchez, I. Aguilera, P. Palacios & P. Wahnón  
UPM, Madrid, Spain  
**First-principles Properties of an Intermediate Band Material Based on Ti-implanted Silicon**
- 1CV.4.48** N. Pinto, M. Ficcadenti, L. Morresi & R. Murri  
University of Camerino, Italy  
E. Tresso, A. Chiodoni, S. Ferrero & P. Mandracci  
University of Turin, Italy  
L. Serenelli  
ENEA, Rome, Italy  
**Silicon Quantum Dots in Silicon Nitride Multilayers Formed by Thermal and Laser Annealing**

- 1CV.4.49** T. Rublack & G. Siefer  
University of Halle, Germany  
**Selective Ablation of Passivation Layers on Silicon Solar Cells by Ultrashort Laser Pulses**
- 1CV.4.50** N.L. Dmitruk & A.V. Korovin  
National Academy of Science Ukraine, Kiev, Ukraine  
**Plasmonic Photovoltaics: Photocurrent Enhancement by Metal Nanoparticles on Solar Cell Interface**
- 1CV.4.51** C. Zhang, H. Jin & K. Weber  
The Australian National University, Canberra, Australia  
**Atomic H Exposure to Thermally Oxidized Si/SiO<sub>2</sub> Interface**
- 1CV.4.53** D. König, S. Shrestha, J. Rudd, G. Conibeer & M.A. Green  
University of NSW, Sydney, Australia  
**Doping of Si-Based Dielectrics for Providing Majorities to Si Quantum Dots: Acceptors in SiO<sub>2</sub>**

**VISUAL PRESENTATIONS 2CV.5****Mono- and Multicrystalline Silicon Materials and Cells**

- 2CV.5.1** C. Gong, K. Van Nieuwenhuysen, N. Posthuma, E. Van Kerschaver, G. Beaucarne & J. Poortmans  
IMEC, Leuven, Belgium  
**Epitaxial Boron-Doped Emitter for Rear Junction n-Type Solar Cells**
- 2CV.5.2** H. Antoniadis  
Innovallight, Sunnyvale, USA  
**Silicon Ink High Efficiency Solar Cells**
- 2CV.5.3** F. Book, B. Raabe, A. Dastgheib-Shirazi, H. Haverkamp & G. Hahn  
University of Konstanz, Germany  
**Detailed Analysis of High Sheet Resistance Emitters for Selectively Doped Silicon Solar Cells**
- 2CV.5.4** I. Koehler, W. Stockum, O. Doll, M. James & E. Plummer  
Merck, Darmstadt, Germany  
S. Gatz, M. Prütz & H. Plagwitz  
ISFH, Emmerthal, Germany  
**Direct Inkjet Printing of SiO<sub>2</sub> Diffusion Barrier for the Formation of Local Boron Back Surface Fields**
- 2CV.5.5** A. Rodofili, K. Mayer, S. Hopman, A. Fell, C. Fleischmann, M. Mesec, F. Granek & S.W. Glunz  
Fraunhofer ISE, Freiburg, Germany  
**Characterisation of n- and p-type doping with Laser Chemical Processing (LCP)**
- 2CV.5.6** S. Dubois, N. Enjalbert & J.P. Garandet  
CEA, Le Bourget du Lac, France  
J. Kraiem  
Apollon Solar, Lyon, France  
I. Perichaud & S. Martinuzzi  
Paul Cézanne University, Marseille, France  
**B-P Compensation in SoG Silicon: Curse or Cure?**

- 2CV.5.7** S. Braun, B. Raabe, D. Kohler, S. Seren & G. Hahn  
University of Konstanz, Germany  
**Comparison of Buried Contact and Screen Printed 100% UMG Solar Cells Resulting in 16.2% Efficiency**
- 2CV.5.8** M.P. Stewart, K. Wijekoon, R. Mishra & T.W. Weidman  
Applied Materials, Santa Clara, USA  
**Efficiency of Alternative Wet Cleaning Processes on Monocrystalline Si Solar Wafers Measured by VPD/ICP-MS and QSSPC Lifetime**
- 2CV.5.9** U. Jäger, A. Grohe & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Selective Emitter by Laserdoping from Phosphorus Silicate Glass**
- 2CV.5.10** K. Birmann, M. Zimmer & J. Rentsch  
Fraunhofer ISE, Freiburg, Germany  
**Controlling the Surface Tension of Alkaline Etching Solutions**
- 2CV.5.12** J. Kruemberg, I. Melnyk, M. Schmidt & P. Fath  
GP Solar, Konstanz, Germany  
L. Heiliger  
Chem-Solutions, Neustadt, Germany  
H. Nussbaumer  
RENA, Gütenbach, Germany  
**New Innovative Alkaline Texturing Process for CZ Silicon Wafers**
- 2CV.5.13** M. Lippold, M. Weser, S. Patzig-Klein & E. Kroke  
TU Bergakademie Freiberg, Germany  
**Fundamental Studies of Acidic Wet Chemical Etching Processes – Acidification of HF-HNO<sub>3</sub>-H<sub>2</sub>O Etching Mixtures and Partial Substitution of Hydrofluoric Acid**
- 2CV.5.14** I. Röver & K. Wambach  
Deutsche Solar, Freiberg, Germany  
S. Patzig-Klein & E. Kroke  
TU Bergakademie Freiberg, Germany  
**Oxidation Reactions at Silicon/Electrolyte Interfaces: Crucial Steps in HF – HNO<sub>3</sub> – H<sub>2</sub>O Etching Processes**
- 2CV.5.15** D. Kohler, B. Raabe, S. Braun, S. Seren & G. Hahn  
University of Konstanz, Germany  
**Upgraded Metallurgical-Grade Silicon Solar Cells: A Detailed Material Analysis**
- 2CV.5.16** O. Doll, I. Koehler, W. Stockum & C. Tueshaus  
Merck, Darmstadt, Germany  
D. Erath & D. Biro  
Fraunhofer ISE, Freiburg, Germany  
**Improved Edge Isolation of Solar Cells Applying Readily Dispensable Etching Paste**
- 2CV.5.17** T. Laueremann, H. Haverkamp, A. Dastgheib-Shirazi, F. Book, B. Raabe & G. Hahn  
University of Konstanz, Germany  
D. Habermann, C. Demberger & C. Schmid  
Gebr. Schmid, Freudenstadt, Germany  
**InSECT: An In-Line-Selective Emitter Concept with High Efficiencies at Competitive Process Costs Improved with Inkjet Masking Technology**

Visual Presentations

- 2CV.5.18** M. Okanovic, U. Jäger, A. Fell, A. Grohe & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**Influence of Different Laser Parameters in Laserdoping from Phosphorus Silicate Glass**
- 2CV.5.19** C. Duran, T. Buck & R. Kopecek  
ISC Konstanz, Germany  
S. Eisele, J. R. Köhler & J.H. Werner  
University of Stuttgart, Germany  
**Bifacial Solar Cells with Selective B-BSF by Laser Doping**
- 2CV.5.20** M. Abburi, T. Bostrom & I. Olefjord  
Norut Technology, Narvik, Norway  
**Electrochemical Texturing of mc-Silicon Wafers in Alkaline Solutions**
- 2CV.5.21** J. Jourdan, L.M. Popescu, A. Halm & R. Kopecek  
ISC Konstanz, Germany  
**Selective Emitter Solar Cell on p-Type Solar Grade Silicon Wafers**
- 2CV.5.22** J. Robbelein, E. Van Kerschaver, N.E. Posthuma, G. Beaucarne & J. Poortmans  
IMEC, Leuven, Belgium  
C. Belouet & E. Jolivet  
SolarForce, Bourgoin-Jallieu, France  
A. Focsa & A. Slaoui  
InESS, Strasbourg, France  
**Development of Solar Cells on RST-Ribbons**
- 2CV.5.23** S. Queisser & E. Wefringhaus  
ISC Konstanz, Germany  
K. De Keersmaecker & T. Borgers  
Photovoltech, Tienen, Belgium  
C. Aresipathi, B. Sander, D. Nagel & F. Delahaye  
RENA, Gütenbach, Germany  
**Inline Single Side Polishing and Junction Isolation for Rear Side Passivated Solar Cells**
- 2CV.5.24** H. Haverkamp, F. Book, A. Dastgheib-Shirazi, T. Lauer mann & G. Hahn  
University of Konstanz, Germany  
R. Bleidiessel & M. Fleuster  
Solland Solar Cells, Aachen, Germany  
**The Optimal Choice of the Doping Levels in an Inline Selective Emitter Design for Screen Printed Multicrystalline Silicon Solar Cells**
- 2CV.5.25** W. L. Chang & W. C. Sun  
Industrial Technology Research Institute, Hsinchu, Taiwan  
C.H. Chang & P. Yup  
National Chiao Tung University, Hsinchu, Taiwan  
**High Efficiency Multicrystalline Silicon Solar Cells Using Novel Indium-Tin-Oxide Nano-Whiskers Structure**
- 2CV.5.26** A. Orpella Garcia, S. Blanque, I. Martín, C. Voz & R. Alcubilla  
UPC, Barcelona, Spain  
I. Sanchez, M. Colina & C. Molpeceres  
UPM, Madrid, Spain  
**Optimization of Laser Processes in n++ Emitter Formation for c-Si Solar Cells**

Visual Presentations

- 2CV.5.27** H. Nagel, S. Bagus, W. Hefner & W. Schmidt  
SCHOTT Solar, Alzenau, Germany  
V. Schütz, O. Haupt & R. Kling  
Laser Zentrum Hannover, Germany  
S. Massa & U. Stute  
TRUMPF Laser, Schramberg, Germany  
T. Schlenker  
Manz Automation, Reutlingen, Germany  
**Excellent Edge Isolation of Crystalline Silicon Solar Cells Obtained by High-Power Picosecond Laser**
- 2CV.5.28** Y. Nishimoto  
Mitsubishi Electric, Hyogo, Japan  
M. Matsumura  
Oosaka University, Toyonaka, Japan  
**New Texturing Technique Suitable for the Mass Production of Multicrystalline Si Solar Cells**
- 2CV.5.29** Y. Wu, K. Boulif, C. Devilee, B.B. van Aken, W. J. Soppe, A.W. Weeber & L.J. Geerligs  
ECN, Petten, The Netherlands  
**Properties of Silicon Heterojunctions Deposited by a Novel Linear Remote PECVD Source**
- 2CV.5.30** M. Rinio, A. Yodyunyong, M. Pirker, C. Zhang, D. Günther, P. Botchak, S. Keipert & D. Borchert  
Fraunhofer ISE, Gelsenkirchen, Germany  
M. Heuer  
Calisolar, Berlin, Germany  
S. Hudelson & T. Buonassisi  
MIT, Cambridge, USA  
**New Results Using a Low Temperature Anneal in Processing of Multicrystalline Solar Cells**
- 2CV.5.31** C. Allebé, T. Janssens, X. Loozen, P. Choulat, J. John, N.E. Posthuma, E. Van Kerschaver & G. Beaucarne  
IMEC, Leuven, Belgium  
**An Integrated Approach for Selective Emitter Formation**
- 2CV.5.32** M. Di Sabatino, E. Ovrelid & A.N. Værnes  
SINTEF, Trondheim, Norway  
R. Kopecek  
ISC, Konstanz, Germany  
S. Binetti  
UNIMIB, Milan, Italy  
L. Geerligs  
ECN, Petten, The Netherlands  
R. Kvande  
Fesil Sunergy, Trondheim, Norway  
C. Knopf  
Deutsche Solar, Freiberg, Germany  
S. Pozigun  
Pillar, Kiev, Ukraine  
L. Caballero  
Isofoton, Málaga, Spain  
**Development of Solar-Grade Silicon Feedstock for Crystalline Wafers and Cells by Purification and Crystallisation**

Visual Presentations

- 2CV.5.33** S.-P. Su, J.-H. Guo, H.T. Chen, P.-S. Huang & A.W.-C. Lu  
E-TON SOLAR TECH., Tainan, Taiwan  
**Progress of Mask-Less Selective Emitter Solar Cells by Inkjet Doping Technology**
- 2CV.5.34** S. Bastide  
CNRS, Thiais, France  
Y. Veschetti  
CEA, Grenoble, France  
**Influence of Illumination and Electrochemical Conditions on the Photoelectrochemical Texturization of N-Type Si**
- 2CV.5.35** E. Urrejola & K. Peter  
ISC, Konstanz, Germany  
A. Soiland & E. Enebakk  
Elkem Solar, Kristiansand, Norway  
**POCl<sub>3</sub>-Diffusion with In-Situ SiO<sub>2</sub>-Barrier for Selective Emitter Multicrystalline Solar Grade Silicon Solar Cells**
- 2CV.5.36** K. Mikeska, L.K. Cheng, Z. Li & L. Liang  
Du Pont, Wilmington, USA  
A. Belitz  
Q-Cells, Bitterfeld-Wolfen, Germany  
R.J. Young & B. Whittle  
Du Pont, Bristol, United Kingdom  
**Effect of High Sheet Resistance Emitter Phosphorous Concentrations on Multicrystalline Silicon Solar Cell Performance**
- 2CV.5.37** T. Janssens, N.E. Posthuma, E. Van Kerschaver, K. Baert, P. Choulat, J. Goosens, W. Van der Vorst, G. Beaucarne & J. Poortmans  
IMEC, Leuven, Belgium  
**Advanced Phosphorus Emitters for High Efficiency Si Solar Cells**
- 2CV.5.38** J. R. Köhler, S. Eisele, T. Röder, C. Wagner & J.H. Werner  
University of Stuttgart, Germany  
P. Grabitz  
SOLARWATT Cells, Heilbronn, Germany  
**Laser Doped Selective Emitters Improve Efficiency of Crystalline Silicon Solar Cells by 0.3%**
- 2CV.5.39** P. Bellanger, K. Derbouz Draoua, D. Bangis, M. Grau & A. Straboni  
S'TILE, Poitiers, France  
J.M. Serra & A.M. Vallera  
University of Lisbon, Portugal  
S. Dubois  
INES, Le Bourget du Lac, France  
**Multicrystalline Silicon Wafers Prepared by Sintering of Silicon Bed Powders and Re-Crystallization Using ZMR.**
- 2CV.5.40** W. Saule, F. Delahaye, J. Schweckendiek & H. Nussbaumer  
RENA, Gütenbach, Germany  
S. Queisser & E. Wefringhaus  
ISC, Konstanz, Germany  
**High Efficiency Inline Diffusion Process with Wet-Chemical Emitter Etch-Back**
- 2CV.5.41** E. Wefringhaus & A. Helfricht  
ISC Konstanz, Germany  
**KOH/Surfactant as an Alternative to KOH/IPA for Texturisation of Monocrystalline Silicon**

Visual Presentations

- 2CV.5.42** C. Bertram, A. Wolf, U. Belledin, E. Wotke & D. Biro  
Fraunhofer ISE, Freiburg, Germany  
**Emitter Profile Tailoring by Gas Flux Variation in Tube Furnace POCl<sub>3</sub>-Diffusion and Analysis of the Phosphorus Silicate Glass**
- 2CV.5.44** B. Bazer-Bachi, E. Fourmond & M. Lemiti  
INL, Villeurbanne, France  
**On the Hydrogen Passivation of Highly Doped Emitters**
- 2CV.5.45** C.H. Lung, C.-H. Du, W.-C. Sun & C.-H. Lin  
Industrial Technology Research Institute, Hsin Chu, Taiwan  
**Etch Back Phenomenon Study for Nitric Acid Clean Prior Silicon Nitride Antireflection Coating in the p-Type c-Si Solar Cell Manufacturing**
- 2CV.5.46** M. Gauthier, M. Grau, O. Nichiporuk, F. Madon, V. Mong-The Yen & N. Le Quang  
PHOTOWATT International, Bourgoin Jallieu, France  
A. Zerga & A. Slaoui  
InESS-CNRS, Strasbourg, France  
**Industrial Approaches of Selective Emitter on Multicrystalline Silicon Solar Cells**
- 2CV.5.47** S. E. Foss, H.N. Scarborough, K. Mangersnes & J. Mayandi  
Institute for Energy Technology, Kjeller, Norway  
**Optimisation of Laser Doped Emitters for Solar Cells**
- 2CV.5.48** L. Serenelli & M. Tucci  
ENEA, Rome, Italy  
**Plasma Dry Surface Treatment for Multicrystalline Silicon Wafers**
- 2CV.5.49** A. Focsa, A. Slaoui & S.B. Schmitt  
InESS, Strasbourg, France  
E. Jolivet & C. Belouet  
SolarForce, Bourgoin-Jallieu, France  
E. Van Kerschaver & J. Robbelein  
IMEC, Leuven, Belgium  
**Conventional Solar Cell Processing on Thin RST Ribbons**
- 2CV.5.50** D. Fenning, M. Bertoni & T. Buonassisi  
MIT, Cambridge, USA  
**Insights into the Optimal Phosphorus Diffusion Profile for Silicon Solar Cells**
- 2CV.5.51** P. Ferrada, R. Harney & E. Wefringhaus  
ISC Konstanz, Germany  
J. Lossen & K. Meyer  
ersol Solar Energy, Erfurt, Germany  
**Diffusion through Semitransparent Barriers on p-Type Silicon Wafers**
- 2CV.5.52** G. Khrypunov, V.R. Kopach, M.V. Kirichenko & R.V. Zaitsev  
National Technical University "Kharkiv Polytechnic Institute", Ukraine  
**Development and New Application of Single-Crystal Silicon Solar Cells**

Visual Presentations

- 2CV.5.53** D. Biro, U. Belledin, R. Bergander, F. Clement, D. Erath, G. Emanuel, L. Gautero, C. Harmel, N. Kohn, A. Krieg, A. Lemke, N. Mingirulli, M. Menkö, I. Reis, A. Weil, W. Wolke, M. Zimmer, A. Grohe, S. Rein, J. Rentsch & R. Preu  
Fraunhofer ISE, Freiburg, Germany  
**PV-TEC: Retrospection to Three Years of Operation of a Production Oriented Research Platform**
- 2CV.5.54** M. Reuter, O. Tobail & J.H. Werner  
University of Stuttgart, Germany  
**Trapping in String Ribbon Multicrystalline Silicon Material**
- 2CV.5.55** S. Steen, H. Hovel & X. Shao  
IBM Corporation, Yorktown, USA  
G. Pfeiffer  
IBM Corporation, Fishkill, USA  
R. Krause  
IBM Deutschland, Mainz, Germany  
**Process to Build Ultra Thin Mono Crystalline Silicon PV Cells**
- 2CV.5.56** F. Souren & J. Rentsch  
Fraunhofer ISE, Freiburg, Germany  
M. van de Sanden & W. Kessels  
Eindhoven University of Technology, The Netherlands  
**Quantitative Characterization of Dry Textured Silicon Wafers**
- 2CV.5.57** S. Keipert, B. Ickler, S. Müller, M. Rinio & D. Borchert  
Fraunhofer ISE, Gelsenkirchen, Germany  
U. Belledin & D. Biro  
Fraunhofer ISE, Freiburg, Germany  
**Investigation and Development of Industrial Feasible Cleaning Sequences Prior to Silicon Nitride Deposition Enhancing Multicrystalline Silicon Solar Cell Efficiency**
- 2CV.5.58** L. La Notte, E. Bobeico, S. Esposito, I. Usatii, P. Delli Veneri, L. Lancellotti, F. Formisano, L. V. Mercaldo, A. Romano & F. Roca  
ENEA, Portici, Italy  
M. Losurdo, P. Capezzuto & G. Bruno  
IMIP-CNR, Bari, Italy  
**Dry and Wet- Treatments of the c-Si Surface for the Realization of Cost Effective Solar Cells**
- 2CV.5.59** C. Smits, R. Ramaneti, B. Kniknie, B. Van Gerwen, M.V. den Bekker-Tiba, R. C. Bosch & F.C. Dings  
OTB Solar, Eindhoven, The Netherlands  
A. Illiberi & M. van de Sanden  
Eindhoven University of Technology, The Netherlands  
**Millisecond Carrier Lifetimes Using Passivation by Amorphous Silicon Deposited on an Industrial Platform**
- 2CV.5.60** V.X. Nguyen, M. Reuter, K. Brenner & J.H. Werner  
University of Stuttgart, Germany  
**POC13-Diffusion for Screen Printed Solar Cell Emitter Formation**
- 2CV.5.61** D.Z. Dimitrov, C.-H. Lin, C.-H. Du, W.-C. Sun & C.-W. Lan  
ITRI, Hsin Chu, Taiwan  
**Nanotextured Silicon Solar Cells Prepared by Using Standard Screen-Printing Process**

Visual Presentations

- 2CV.5.62** T. Ritzl, C. Voyer, C. Beck & R. Dahl  
centrotherm photovoltaics technology, Konstanz, Germany  
A. Piechulla & J.-D. Kähler  
centrotherm thermal solutions, Blaubeuren, Germany  
H. Wanka & P. Fath  
centrotherm photovoltaics, Blaubeuren, Germany  
**A Novel Low Pressure Diffusion Furnace for the Production of Crystalline Silicon Solar Cells – Equipment and Process Development**
- 2CV.5.63** P. Panek, K. Drabczyk, P. Zieba, R.P. Socha & B. Rajchel  
Polish Academy of Sciences, Krakow, Poland  
**The Laser-Fired Back Contacts for Crystalline Silicon Solar Cells**
- 2CV.5.64** B. Díaz-Herrera, B. Gonzalez-Diaz, C. Hernández-Rodríguez, E. Jiménez-Rodríguez, A. Montesdeoca-Santana & R. Guerrero-Lemus  
University of La Laguna, Spain  
M. Rinio & D. Borchert  
Fraunhofer ISE, Gelsenkirchen, Germany  
**Upgraded Metallurgical Grade Silicon for Solar Cell Fabrication**
- 2CV.5.65** A. Ebong, B. Rounsaville & A. Rohatgi  
Georgia Institute of Technology, Atlanta, USA  
B. Bunkenburg, J. Cathey, S. Kim & D. Ruf  
Despatch Solar, Lakeville, USA  
**Optimizing the Inline Emitters for Higher Efficiency Silicon Solar Cells**
- 2CV.5.66** M. Weiß, K. Meyer, T. Wütherich, R. Jesswein & J. Lossen  
ersol Solar Energy, Erfurt, Germany  
**Selective Emitter Design Proves its Capability of Near-Term Realization on Industrial Scale**
- 2CV.5.67** B. Bunkenburg & K. Barringer  
Despatch Solar, Minneapolis, USA  
S. Kim  
Despatch Solar, Goleta, USA  
B. Cruz  
Ferro, Vista, USA  
**Enabling Thin Wafers for Today's High Efficiency Silicon Solar Cells**
- 2CV.5.68** M. Lipinski  
Polish Academy of Sciences, Krakow, Poland  
J. Cichoszewski  
University of Stuttgart, Germany  
**Texturization of Silicon Solar Cells by Metall-Assisted Chemical Etching**
- 2CV.5.69** S. Uredat & J.-T. Zettler  
LayTec, Berlin, Germany  
H. Angermann  
Helmholtz Centre Berlin for Materials and Energy, Germany  
**Surface Texturization and Interface Passivation of Mono- and Polycrystalline Silicon Substrates: Evaluation of the Wet Chemical Treatments by UV-NIR-Reflectance**
- 2CV.5.70** N. Ximello, H. Haverkamp & G. Hahn  
University of Konstanz, Germany  
**A New KOH-etch Solution to Produce a Random Pyramide Texture on Monocrystalline Silicon at Elevated Process Temperatures and Shortened Process Times**

Visual Presentations

- 2CV.5.71** A. Haarahiltunen, H. Talvitie, M. Yli-Koski, V. Vähänissi & H. Savin  
Helsinki University of Technology, Espoo, Finland  
**Analysis of Phosphorus Diffusion Gettering of Iron in Silicon**
- 2CV.5.72** S. Mathijssen, I. Melnyk, M. Michel, M. Schmidt & P. Fath  
GP Solar, Konstanz, Germany  
S. Braun, J. Pröbß, S. Schotthöfer & O. Rogge  
BASF, Ludwigshafen, Germany  
**Survey of Acid Texturing and New Innovative Acid Processes for mc Solar Wafers**
- 2CV.5.73** C.-H. Lin, D.Z. Dimitrov, C.-H. Du, W.-C. Sun & C.-W. Lan  
Industrial Technology Research Institute, Hsin Chu, Taiwan  
**Non-Vacuum Processing and Properties of Black Silicon Solar Cell**
- 2CV.5.74** G. Bauer & M. Balooch  
The Linde Group, Livermore, USA  
C. Dove  
The Linde Group, Taipei, Taiwan  
**Production Worthy Solutions for Texturing Single and Multi-Crystalline Silicon Solar Cells**
- 2CV.5.75** D. Linaschke, M. Leistner, W. Grähler, I. Dani, S. Kaskel, E. Beyer & E. Lopez  
Fraunhofer IWS, Dresden, Germany  
A. Poruba & R. Barinka  
Solartec, Roznov pod Radhostem, Czech Republic  
L. Stolze  
Q-Cells, Bitterfeld-Wolfen, Germany  
**Crystalline Silicon Wafer Processing at Atmospheric Pressure and In-Line FTIR Spectroscopic Process Monitoring**
- 2CV.5.76** L. Wang & R. Hockett  
Evans Analytical Group, Sunnyvale, USA  
**SIMS Study of C, O and Compensation (B and P) on Si Solar Cell Performance**
- 2CV.5.77** T. Brandau & E. Brandau  
Brace, Alzenau, Germany  
**Preparation of Silicon Granules with Tight Size Distribution – Two Novel Low Cost High Throughput Processes for the Silicon Industry**
- 2CV.5.78** Z. Liu, H. Takato & I. Sakata  
AIST, Tsukuba, Japan  
**Development of Phosphorus Spray Diffusion for the Applications on Thin Crystalline Silicon Solar Cells**
- 2CV.5.79** S. Ahn, S. Yang, J. Kang & S. Nor  
Hyundai Heavy Industries, Chungcheongbukdo, Republic of Korea  
**Enhanced PV Cell Manufacturing Process for Low Quality Wafers**
- 2CV.5.80** J. Lee, J. Kang, S. Yang & S. Nor  
Hyundai Heavy Industries, Eum Seong, Republic of Korea  
**Influence of Belt Mark at the Crystallized Si Solar Cell in IR Belt Furnace Diffusion Process**

Visual Presentations

- 2CV.5.81** A. Ben Jaballah & H. Ezzaouia  
Research and Technology Centre of Energy, Hammam-Lif, Tunisia  
M. Dhamrin, T. Saitoh & K. Kamisako  
TUAT, Tokyo, Japan  
B. Bessais  
Laboratory of Nanomaterials and Systems for Energy, Hammam-Lif, Tunisia  
**Boron Diffusion in Silicon Using Spin-on Dopant: Investigations on the Impacts of Inert and Oxidized Conditions on Effective Carrier Lifetime and Diffusion Length**
- 2CV.5.83** N. Borojevic, A.J. Lennon & S.R. Wenham  
University of NSW, Sydney, Australia  
**Inkjet Texturing for Multicrystalline Silicon Solar Cells**
- 2CV.5.84** N. Mingirulli, D. Stüwe, J. Specht & D. Biro  
Fraunhofer ISE, Freiburg, Germany  
**18.8% Screen-Printed EWT-Cells with Single Step Side Selective Emitter Formation**