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27-3	High Efficiency Solar Module with Concentrator and Tracker NuoFu Chen ^{1,2} , Yiming Bai ¹ , Ping Liang ¹ , Jinliang Wu ^{1,2} , Chenlong Chen ¹ 1Key Laboratory of Semiconductor Materials Science, Institute of Semiconductors, Chinese Academy of Sciences, P.R.China, 2National Laboratory of Microgravity, Institute of Mechanics, Chinese Academy of Sciences, P. R. China

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27-7	<p>Analysis and Application of I-V Curve of PV Module</p> <p>Li Yongmei, Sun Yongming, Shi Shanglin Xi'an REW Co., Ltd. Xi'an, P.R.China,</p>
27-8	<p>Diagnostic Method for Evaluation of PV Modules Using AC Impedance Spectroscopy</p> <p>T. Chayavanich, C. Limsakul, N. Chayavanich, D. Chenvidhya and K. Kirtikara Clean Energy Systems Group (CES), King Mongkut's University of Technology Thonburi, Thailand Corresponding</p>
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28-9	10% from renewables? The role of BEMS and ESCO's in HK Schools BIPV Installations *Josie Close ¹ , KH Lam ¹ , Huey Pang ¹ , Steven Humphreys ² Centre of Renewable Energy, University of Hong Kong, Hong Kong China DLS Management Ltd, Leighton Centre, Causeway Bay, HK
29-1	Oxygen Partial Pressure Dependence of the Properties of ZnO:Al Films Prepared by Mid-frequency Sputtering Liu Jiayu ^{1,2} , Xue Junming ² , Liu Jinbiao ² , Yang Ruixia ¹ , Sun Jian ² , Zhao Ying ² , Geng Xinhua ² 1. School of Information Engineering, Hebei University of Technology, P.R.China, 2. Institute of photo-electronic thin film devices and technique of Nankai University, Key Laboratory of photoelectronics thin film devices and technique of Tianjin, Key Laboratory of Optoelectronic Information Science and Technology, Chinese Ministry of Education, P.R.China
29-2	Investigations on Fill-Factor Drop of Microcrystalline Silicon P-I-N Solar Cells Deposited onto Highly Surface-textured ZnO Substrates Luc Feitknecht, Jérôme Steinhauser, Romain Schlüchter, Sylvie Fay, Didier Dominé, Evelyne Vallat-Sauvin, Fanny Meillaud, Christophe Ballif & Arvind Shah Institute for Microtechnology (IMT) University of Neuchâtel, Switzerland
29-3	Processing-induced Infrared Spectrum Characterization in Al Doped ZnO Films Z.B. Zhou, W. Jiang, P.Q. Luo, Z. G. Liu, Q.H. Ye, S.Q. Lin, F.Y. Meng, R.Q. Cui 1Department of Physics, Shanghai Jiao Tong University, P.R.China,
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30-2	Phase Matched Simultaneous Cell Gap Measurement Reflective LCD by Polarization -Angle Chia-Fu, Chang, Yi-Ci, Chan, Zou-ni, Wan Chinese Taipei of Kun Shan Technolog University, Taiwan, R.O.C.,
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31-5	<p>Fabrication of β-FeSi₂ films for solar cells using thin film zone melting crystallization</p> <p>Yumi Tanaka^{1,2}, Manabu Ihara^{2,1} 1“Conversion and control by advanced chemistry”, PRESTO, Japan science and technology corporation (JST) 2Tokyo institute of technology, Research center for carbon recycling and energy, Tokyo</p>
31-6	<p>Core-Shell Nanostructured Working Electrodes: Application To Dye-Sensitised Solar Cells</p> <p>David Menzies¹, Qing Dai², Laure Bourgeois¹, Yi-Bing Cheng^{1*}, George P. Simon¹ and Leone Spiccia², 1Department of Materials Engineering, Monash University, Australia, 2School of Chemistry, Monash University, Australia</p>
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32-3	<p>Effects of Sn Concentration in Indium Tin Oxide Back Contacts on the Device Performance of Cu(In_{1-x}Ga_x)Se₂ Thin Film Solar Cells</p> <p>Naoomi Yamada, Tsukasa Tatejima, Hiroki Ishizaki, Tokio Nakada Department of Electrical Engineering and Electronics, Aoyama Gakuin University, Japan,</p>
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33-4	Study on Improvement of the Uniformity for Preparing Polycrystalline Silicon Films Rui Huang, Xuanying Lin*, Yunpeng Yu, Kuixun Lin, Junhong Wei, Zusong Zhu Department of Physics, Shantou University, People Republic of China,
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35-5	MOVPE Growth Conditions and Characterization of InGaAsN: an Alternative 1.0 eV Bandgap Solar Cell Material Sakuntam Sanorpim ¹ , Fumihiro Nakajima ² , Wataru Ono ² , Ryuji Katayama ² , and Kentaro Onabe ² 1Semiconductor Physics Research Laboratory, Department of Physics, Faculty of Science, Chulalongkorn University, Pathumwan, Thailand. 2 Department of Advanced Materials Science, The University of Tokyo, Japan.
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36-2	<p>ZnO Layers Incorporated into $\mu\text{-Si:H}$ Solar Cells : Quantum Efficiency (QE) Results and Proposal for a Fig.of Merit</p> <p>S. Fay, J. Steinhauser, R. Schlüchter, L. Feitknecht, C. Ballif, A. Shah Institut de Microtechnique (IMT), Rue A.-L. Breguet 2, Switzerland</p>
36-3	<p>Stability of Non-encapsulated Thin-film Silicon Solar Cells in Damp Heat Tests</p> <p>H. Stiebig, W. Reetz, C. Haase, T. Repmann, and B. Rech Institute of Photovoltaics, Forschungszentrum Juelich, Germany</p>
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36-6	<p>Control of Microstructure and Surface Morphology of Indium Tin Oxide Films by Changing Initial Growth Conditions</p> <p>Jung Hwan Lee^{*1}, Jun Sik Cho², Young Whan Baeg² and Donghwan Kim¹ 1: Department of Materials Science and Engineering, Korea University, Anam-dong, Korea 2: P&I R&D Center, Korea</p>
36-7	<p>Relationship of Structures and Photoelectric Properties of Novel Cyanine Dyes with Different Methine Chains as Sensitizers for Nanocrystalline Solar Cell</p> <p>Xiuying Chen¹, Xiaojun Peng^{1,*}, Jiahao Guo², Shengmin Cai^{2,*} 1 State key laboratory of fine chemicals, Dalian University of Technology, P.R.China, 2 College of Chemistry and Molecular Engineering, Peking University, P.R.China,</p>
36-8	<p>Etch-Induced Deposition of Si:H for Solar Cell Applications</p> <p>Yuan-Min Li¹ and Zoltan J. Kiss 2,1 1Renewable Energy Solutions, Inc. (RESI), USA; 2TerraSolar Global, USA;</p>
37-1	<p>Physical Investigations on SnS/Ag Schottky Diodes</p> <p>N. K. Reddy¹, K. Ramesh¹, K. T. R. Reddy^{2*} and R. W. Miles³ 1Department of Physics, Indian Institute of Science, India, 2* Department of Physics, Sri Venkateswara University, India, 3School of Engineering, Northumbria University, Newcastle NE1 8ST, UK,</p>
37-2	<p>Optimizations of Organic and Polymeric Photovoltaic Materials and Devices</p> <p>S. Sun^{1*}, C. Zhang¹, J. Haliburton¹, S. Choi¹, A. Ledbetter¹, C. Bonner¹, M. Drees² and N. Sariciftci² 1Center for Organic Photonic Materials Research, Norfolk State University, Norfolk, USA, 2Institute for Organic Solar Cells, Johannes Kepler University, Linz, Austria</p>
37-3	<p>Photovoltaic Characteristics of Boron-incorporated Nanocrystalline Carbon on Silicon as Heterojunction Solar Cell</p> <p>Z.Q. Ma¹, Q. Zhang², D.M. Wang¹, W. Li¹, Y. Wang¹, Z.X. Zhao¹ 1 Microelectronic Group, Department of Physics, Shanghai University, P.R.China, 2 Department of Chemistry, Shanghai University, P.R.China,</p>
37-4	<p>Raman Spectroscopy of Carbon Nitride Films Prepared by Ion Beam Sputtering Technique</p> <p>W. Jiang[*], Z.B. Zhou, P.Q. Luo, X.D. Pu, Z.G. Liu, H.C. Yu, S.W. Ku, Q.H. Ye, R.Q. Cui, X.M. Dou Solar Energy Inst., Dept. of Physics, Shanghai Jiao Tong Univ., P.R. China</p>
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38-2	Study Progress on Tin Sulfide Thin Film Solar Cell QIU Yong-hua, SHI Wei-min, WEI Guang-pu, GE Yan-hui Dept. of Electronic Information Materials, School of Materials Science&Engineering, Shanghai University, China,
38-3	Reactive Magnetron Sputtering of Sulfide Films – A New Approach for Large Area Deposition of Thin Film Solar Cells Stefan Seeger, Thomas Unold, Klaus Ellmer Hahn-Meitner-Institut, Solarenergieforschung, Germany
38-4	Hybrid Absorber Layer For Solar Cell Based on Nanoparticles of CdTe in Polyaniline Matrices Deepak Verma, V.Dutta* and A Ranga Rao *Corresponding author Photovoltaic Laboratory, Center for Energy Studies, Indian Institute of Technology Delhi Hauz Khas, India
38-5	SnO₂ Thin Films by PECVD and Application –in CdS/CdTe Solar Cells Lei Zhi, Feng Lianghuan, Zhang Jingquan, Cai Yaping, Li Bing, Li Wei, Wu Lili Zeng Guanggen, Luo Qiong College of Materials Science and Engineering, Sichuan University, P. R. China
38-6	The Structural Properties of CdTe Film on Si(100) Grown by Hot Wall Epitaxy Yao zhaohui ¹ , Chen tingjin ¹ , Yuan hairong ¹ , Liu zuming ¹ , Liao hua ¹ 1Solar energy research institute, Yunnan Normal University, P.R.China,
38-7	Chemical Bath Deposition of ZnS Thin Films Liu Qi ¹ , Ao Jianping ² , Mao Guobing ¹ , Sun Guozhong ² , Sun Yun ² , Liu Fangfang ² , He Qing ² , Li Fengyan ² , Zhou Zhiqiang ² , Li Changjian ² 1. Anhui Uniniversity of Technology And Science, China; 2. Institute of Photoelectron Technology, Nankai University, China
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39-1	Growth and Characterization of Cu-Ga-Se Thin Films Grown by Molecular Beam Deposition Method Panita Chinvetkitvanich, Chanwit Chityuttakan, Søjiphong Chatraphorn, Kajornyod Yoodee and Somphong Chatraphorn Semiconductor Physics Research Laboratory (SPRL), Department of Physics, Faculty of Science, Chulalongkorn University, Thailand,
39-2	Effect of Selenization Temperature on The Properties of CuInSe₂ Films Prepared by Selenization of Metallic Cu-In Alloy Precursors Fangdan Jiang ¹ , Jiayou Feng ² 1Department of Materials Science and Engineering, Tsinghua University, P.R.China 2Corresponding Author, Department of Materials Science and Engineering, Tsinghua University, P.R.China
39-3	Morphology Improvement of Electrodeposited Bilayer CuInSe₂ Thin Films for Solar Cell Application Shigeyuki Nakamura ¹ , Shinsuke Kunitsugu ² , Minoru Hiramatsu ² 1Department of Electric and Electronic Engineering, Tsuyama National College of Technology, Japan, 2Department of Materials, Industrial Technology Center of Okayama Prefecture
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39-5	Characterization of the Spectral Response of Multi-Junction Solar Cells Yoshihiro HISHIKAWA National Institute of Advanced Industrial Science and Technology (AIST), Research Center for Photovoltaics Central 2, Japan
39-6	CIGS Mini-Modules with Screen-Printed Front Contacts Birger Retterstøl Olaisen ¹ , Sara Woldegiorgis ² , Per-Oskar Westin ² , Marika Edoff ² , Lars Stolt ² , Arve Holt ¹ , Erik Stensrud Marstein ¹ 1Institute for Energy Technology, Norway, 2Ångström Solar Center, Uppsala University, Sweden
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39-8	<p>Study of Selenization Processes in a Low Pressure to Fabricate CuIn_{0.7}Ga_{0.3}Se₂ Thin Film</p> <p>Wei Liu*¹, Jianguo Tian¹, Wei Li², Yun Sun², Fengyan Li², Qing He², Changjian Li² 1College of Physics Science, Nankai University, China, 2Institute of Photoelectron Technology, Nankai University, China,</p>
40-1	<p>Large Area Deposition of μc-Si by Microwave PECVD</p> <p>W.J. Soppe¹, C. Devilee¹, J. Löffler¹, A. Gajovic², P. Dubcek², D. Gracin², H.-J. Muffler¹ 1ECN-Solar Energy, The Netherlands, 2 Rudjer Boskovic Institute, Croatia</p>
40-2	<p>Novel Texturing Approach for Large Scale Industrial Production Line of Large Area Mono-crystalline Silicon Solar Cell</p> <p>U. Gangopadhyay^{2,3}, Kyunghae Kim¹, S. K. Dhungel¹, M. Banerjee³, G. Bhattacharya³, H. Saha³ and J. Yi¹ 1 School of Information and Communication Engineering Sungkyunkwan University, Korea 2 Photon Semiconductors and Energy Company, Korea, 3IC Design & Fabrication Centre, Electronics and Telecommunication Engineering Department, Jadavpur University, India</p>
40-3	<p>Investigation of Low Molarity Alkaline Texturing Solutions</p> <p>Kate Fisher¹ and Jeffrey Cotter 1Center for Excellence in Photovoltaic Engineering, University of NSW, Australia,</p>
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40-6	<p>Epitaxial Mono-crystalline Si thin-films Grown on Self Standing Porous Si Seed Layers for Solar Cells</p> <p>P. J. Rostan, C. Berge, U. Rau, and J. H. Werner Institute of Physical Electronics, University of Stuttgart, Germany</p>
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40-8	<p>Silicon Macropores Formed in Acid and Alkaline Solutions at Different Etching Rates</p> <p>B. González-Díaz¹, N. Marrero¹, D. Borchert², C. Hernández-Rodríguez¹, R. Guerrero-Lemus¹. 1Departamento de Física Básica, Universidad de La Laguna, Astrofísico Francisco Sánchez, Spain. 2Auf der Reihe 2, Institut für Solare Energiesysteme, Fraunhofer Institut, Germany.</p>
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52-3	Is Carbonaceous Film Possible for Photovoltaic Cell? Z.Q.Ma ¹ , Q.Zhang ² , Z.X.Zhao ¹ , W.Li ¹ , Y.Wang ¹ , D.M.Wang ¹ 1 Microelectronic Laboratory, Department of Physics, Shanghai University, China, 2 Department of Chemistry, Shanghai University, China
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53-3	Innovative Emitter Design and Metal Contact for Screen-Printed Solar Cells S.R. Wenham ^{1,2} , L. Mai ¹ , B. Tjahjono ¹ , J. Ji ² , Z. Shi ² 1Centre for Photovoltaic Engineering, University of New South Wales, Australia, 2 Suntech Power Co. Ltd., China
53-4	Crystallographic Properties of Large Grain Poly-Si Thin Films Deposited by Intermittent Source Gas Supply Akiyoshi Ogane, Yu Takahashi, Yukiharu Uraoka, and Takashi Fuyuki Graduate School of Material Science, Nara Institute of Science and Technology (NAIST), Japan

53-5	<p>Electrical Properties around Grain Boundary of Poly-Crystalline Silicon for Solar Cell Evaluated Using the Conductive AFM</p> <p>Toru Ujihara¹, Kazuo Nakajima², Yoshikazu Takeda¹ ¹Department of Crystalline Materials Science, Graduate School of Engineering, Nagoya University, JAPAN, ²Institute for Materials Research, Tohoku University, JAPAN</p>
53-6	<p>Study on Growth Behavior of Polycrystalline Silicon Thin Films on the Foreign Substrates</p> <p>Shen Hui, Ai Bin Institute for Solar Energy System, Energy Engineering Academy, Sun Yat-Sen University, China</p>
53-7	<p>Study on Defects Around Grain Boundaries in Cast-Grown Polycrystalline Silicon</p> <p>K. Arafune, T. Sasaki, F. Wakabayashi, H. Sai, Y. Ohshita and M. Yamaguchi Semiconductor Laboratory, Toyota Technological Institute, Japan</p>
53-8	<p>Fabrication of Poly-Si Seed Layer by Aluminium- Induced Crystallisation of a-Si Deposited by PECVD or Sputtering</p> <p>Per I. Widenborg, Sin Von Chan, Daniel Inns, and Armin G. Aberle Centre of Excellence for Advanced Silicon Photovoltaics and Photonics University of New South Wales, Australia</p>
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54-3	<p>Determination of I-V Characteristics of Solar Photovoltaic Module by Computer Controlled Loading</p> <p>R.K. Nema¹, Savita Nema², Gayatri Agnihotri³ Department of Electrical Engineering, M.A. National Institute of Technology, India</p>
54-4	<p>A Solar Cell String Tester</p> <p>Zhang Kenong, Zhang Qinglong, Lu Jiahua School of Electrical Engineering, Xi'an Jiao Tong University, China</p>
54-5	<p>Designing and Analyzing of 1kW Photovoltaic System in Beijing</p> <p>Li yingzi¹, Yin zhenyong¹, Niu jincang² ¹Department of Electrical Engineering and Automation, Beijing Institute of Civil Engineering & Architecture, China, ²Dispatching & Communication Center of Beijing Electric, China</p>
54-6	<p>Photovoltaic Powered Mixture and Stock Solution Controller for The Plants by Hydroponics Method</p> <p>Ratchadawan Nimmual and Khanchai Tunlasakun King Mongkut's University of Technology Thonburi, THAILAND.</p>
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54-8	<p>Application and Prospects on Wind-PV Hybrid Generating Electricity Household System</p> <p>Li Defu¹, Si Xinwen² ¹Institute of Electrical Engineering, Chinese Academy of Sciences, Haidian District, China, ²Department of Physics, Shanghai Jiao Tong University, China</p>
54-9	<p>Development of a Reliable, Long Life Pyranometer Composed of Multiple Photosensors</p> <p>Keiji Hirata¹, Kosuke Kurokawa¹, Yukiharu Miyake², Kouzou Nakamura² and Tadashi Kato² ¹Tokyo University of Agriculture and Technology, Japan, ²EKO Instruments Trading Co., Ltd. Sasazuka Center Bldg, Japan</p>
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55-4	<p>The Role of Antireflective Coating in Micromorph Silicon Solar Cells</p> <p>J. Krc, F. Smole and M. Topic University of Ljubljana, Faculty of Electrical Engineering, Slovenia</p>
56-1	<p>Development of a Simple and Low Cost I-V Tracer and Its Application for Measuring the Characteristics of Solar Module</p> <p>Wilson W. Wenas, Daniel Kurnia, Boaz Aryanto and Yuliar Firdaus Departement of Physics, Bandung Institute of Technology,JI, Indonesia</p>
56-2	<p>Maximum Power Point Tracking Control of Photo-voltaic Power Generation System using an Online Monitor with L-C Resonant Circuit</p> <p>Yusuke Ogata¹, Shinji Nakahara², Miki Kobayashi³, Yoshio Sawada⁴, and Ichiro Takano⁵ All of Kogakuin University, Japan</p>
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56-4	<p>PV Impedance Characterization Using Square Wave Method and Frequency Response Analyzer</p> <p>Chamnan Limsakul, Nattavut Chayavanich, Dhirayut Chenvidhya and Krissanapong Kirtikara Clean Energy System Group (CES) King Mongkut's University of Technology Thonburi, Thailand.</p>
56-5	<p>Modelling and Performance Evaluation of Hybrid Solar Parabolic Trough Concentrator Systems</p> <p>PANG Huey^{1#}, LO, Edward W.C.¹, CHUNG, T.S.¹, CLOSE Josie² 1Department of Electrical Engineering, The Hong Kong Polytechnic University, China, 2Department of Architecture, The University of Hong Kong, 3/F Knowles Building, Pok Fu Lam Road, China</p>
57-1	<p>Influence of Substrate Roughness on the Quality of Thin-Film Polycrystalline-Silicon Solar Cells Made by Aluminium-Induced Crystallization</p> <p>D. Van Gestel, I. Gordon, L. Carnel, K. Van Nieuwenhuysen, G. Beaucarne and J. Poortmans IMEC vzw, Belgium</p>
57-2	<p>The Application of p-uc-Si Layers in Micromorph Solar Cells and Modules</p> <p>Zhu feng, Zhao ying, Wei changchun, Ren huizhi, Xue junming, Zhang xiaodan, Gao yantao, Zhang dekun, Sun jian, Geng xinhua Institute of photo-electronics thin film devices and technique of Nankai University, Key Laboratory of photo-electronics thin film devices and technique of Tianjin, Key Laboratory of Opto-electronic Information Science and Technology Author</p>
57-3	<p>Flexible Thin Film Amorphous and Microcrystalline Silicon Tandem Modules in the Temporary Superstrate Concept</p> <p>M.N. van den Donker¹, T. Repmann¹, H. Stiebig¹, F. Finger¹, B. Rech¹, B. Stannowski², R. Schlatmann², G.J. Jongerden² 1Institute of Photovoltaics, Forschungszentrum Juelich GmbH, Germany, 2Solar Cells R&D Dept., Akzo Nobel Research & Technology Center, The Netherlands</p>
57-4	<p>Surface Textures for Large-grained Poly-silicon Thin-film Solar Cells On Glass Using the AIT Method</p> <p>Patrick Campbell, Per I. Widenborg, Alistair Sproul and Armin G. Aberle Centre of Excellence for Advanced Silicon Photovoltaics and Photonics, University of New South Wales, Australia</p>
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	<p>Microwave Surface-wave Plasma Chemical Vapor Deposited Amorphous Carbon Thin Films Aimed for the Application of Photovoltaic Solar Cells</p> <p>S. Adhikary¹@, N. Furuichi², T. Shinagawa², Y. Kawahara², O. Saiki², H.R. Aryal², D.C. Ghimire², S. Adhikari², A.M.M. Omer², X.M. Tian¹, H. Uchida¹, M. Umeno¹ 1Department of Electronics and Information Engineering, Chubu University, Japan, 2 Department of Electrical and Electronic Engineering, Chubu University, Japan</p>
58-3	<p>Photovoltaic Characteristics of Iodine-doped Amorphous Carbon Thin Films Grown by Microwave Surface- Wave Plasma CVD</p> <p>Masayoshi Umeno Department of Electronics and Information Engineering, Chubu University, Japan</p>
58-4	<p>Characterization of Microcrystalline Germanium Carbon Thin Films – A Novel Absorber Material for PV Applications</p> <p>Yasutoshi Yashiki, Shinsuke Miyajima, Akira Yamada¹ and Makoto Konagai Department of Physical Electronics, Tokyo Institute of Technology 1. Quantum Nanoelectronics Research Center, Tokyo Institute of Technology, Japan</p>
59-1	<p>High Efficiency Back Contact Si Solar Cells Based on Industrial Technology</p> <p>Kyotaro Nakamura¹, Takayuki Isaka², Yasushi Funakoshi², Yoshifumi Tonomura², Tomohiro Machida² and Koji Okamoto¹ SHARP Corporation, 1Solar Systems Development Center, 2Solar Systems Division, Engineering Dept, Japan</p>
59-2	<p>C-Si Thin-Film Solar Cells on Ceramic Substrates with SiC Intermediate Layers</p> <p>Stefan Janz, Stefan Reber, Holger Habenicht Fraunhofer Institute for Solar Energy Systems, Heidenhofstrasse 2, Germany</p>
59-3	<p>Minority Carrier Lifetime of Silicon Solar Cells Research and Measurement</p> <p>Xun Ma, Zuming Liu, Tingjin Chen, Hua Liao, Jiehui Li, Jingtian Li Solar Energy Research Institute, Yunnan Provincial Renewable Energy Engineering Key Laboratory, Yunnan Normal University, China</p>
59-4	<p>Development of High Throughput – High Yield Solar Ingots Manufacturing Process</p> <p>A. Müller^{1,2}, B.Geyer², M.Ghosh², R.Schindler³ 2Deutsche Solar AG., Berthelsdorfer Str, Germany, 1corresponding author, 3 Fraunhofer Institute for Solar Energy Systems, Heidenhofstraße 2, Germany</p>
59-5	<p>High Trap Densities in Wafers from Regions of Reduced Lifetime in Multicrystalline Silicon Blocks</p> <p>Andreas Bentzen¹, Harsharn Tathgar², Julia Barthez¹, and Arve Holt¹ 1Section for Renewable Energy, Institute for Energy Technology, Norway, 2ScanWafer AS, c/o Section for Renewable Energy, Institute for Energy Technology, Norway</p>
60-1	<p>Efficient Silicon Heterojunction Solar Cells O N-Type and P-Type Substrates Processed at Low Temperatures</p> <p>K. v. Maydell, E. Conrad and M. Schmidt Hahn-Meitner-Institute Berlin, Germany</p>
60-2	<p>Large Area N-Type Multicrystalline Silicon Solar Cells with B-Emitter: Efficiencies Exceeding 14%</p> <p>R. Kopecek¹, T. Buck¹, J. Libal¹, R. Petres¹, I. Röver², K. Wambach², R. Kinderman³, L. J. Geerligs³, P. Fath¹ 1University of Konstanz, Faculty of Sciences, Department of Physics, Jakob-Burckhardt-Str, Germany, 2Deutsche Solar AG, Alfred-Lange Str, Germany, 3Energy research Centre of the Netherlands - ECN, The Netherlands</p>
60-3	<p>Bifacial Solar Cells on Multi-crystalline Silicon</p> <p>A. Kränzl, R. Kopecek, B. Terheiden, P. Fath University of Konstanz, Faculty of Sciences, Department of Physics, Germany *now at: Institut für Solarenergieforschung GmbH Hameln, Germany</p>
60-4	<p>Fabrication of Novel Silicon Based Heterojunction Solar Cell by Using n-type Microcrystalline 3C-SiC</p> <p>¹Chandan Banerjee*, ¹S. Miyajima, ¹K. L. Narayanan, ²Akira Yamada and ¹Makoto Konagai 1Department of Physical Electronics, 2Quantum Nanoelectronics Research Center, Tokyo Institute of Technology, Japan</p>
60-5	<p>High Quality Granular Polycrystalline Silicon for Efficient Low-Cost PV-Applications</p> <p>P. Ege, B. Ceccaroli, R. Hamilton¹, T. Hartmann, E. Macalalad, J. Maurits 1Solar Grade Silicon LLC, USA</p>

61-1	<p>Installation and Performance Evaluation of 100 kWp PV System in Tibet</p> <p>Jinsoo Song, Jae Ho Yun, Seok Ki Kim, Jeong Chul Lee, Se Jin Ahn, Kyung Hoon Yoon Li Junfeng*, Xu Honghua** Solar Cells Research Center, Korea Institute of Energy Research, Korea *Chinese Renewable Energy Industries Association, China, **Beijing Corona Science and Technology Co.Ltd., China</p>
61-2	<p>New Storage PV Home Power Supply</p> <p>JianPing Zhao, ShuKun Liu Baoding Tianwei Yingli New Energy Resources Co., Ltd, Baoding</p>
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62-1	<p>Toward High Efficient Polymer-Nanoparticle Photovoltaic Devices</p> <p>T-W Zeng,¹ L-Y Wang,^{2,3} C-A Dai,^{3,4} C-W Chen,¹ W-F Su^{1,2,3} 1 Department of Materials Science and Engineering, National Taiwan University, Taiwan, 2 Center of Condensed Matter, National Taiwan University, China, 3 Institute of Polymer Science and Engineering, National Taiwan University, China, 4 Department of Chemical Engineering, National Taiwan University, China</p>
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62-3	<p>The Analysis of Key Factors to Determine the Electrochemical Activity of Fe:NiOx Film for Solar Cell</p> <p>Li Hailing¹, Wang Wenjing¹, Kang Guohu¹, Huang Jinzhao², Xu Zheng² 1.Beijing solar energy resarch institute, China, 2.Laboratory of Materials for Information Storage and Display, Institute of Optoelectronic Technology, Beijing Jiaotong University, China</p>
62-4	<p>Heat-Resistant Properties of CIGS-Based Thin Film Solar Cells</p> <p>Shunsuke Kijima and Tokio Nakada Dept of Electrical Engineering and Electronics, Aoyama Gakuin University, Japan</p>
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63-3	<p>Investigation on The Role of Hydrogen in Hydrogenated Microcrystalline Silicon and Its Growth Process under RF and VHF-PECVD Technique</p> <p>Huidong Yang Department of Electronic Engineering, Jinan University, China</p>
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63-5	<p>Development of Ultra Thin P-type Microcrystalline Silicon with High Conductivity and High Crystalline Volume by RF-PECVD at High Pressure</p> <p>Guo Qunchao, Hou Guofu, Geng Xinhua, Xue Junming, Liu Jiayu Institute of photoelectronics thin film devices and technique of Nankai University Key Laboratory of photoelectronics thin film devices and technique of Tianjin Key Laboratory of Optoelectronic Information Science and Technology, Ministry of Education, China</p>
63-6	<p>Structural Change of Microcrystalline Silicon Thin Films Deposited by Hot Wire CVD and Its Influence on the Solar Cell Performance</p>

	Shuichi Hiza ¹ , Wataru Matsuda ¹ , Akira Yamada ² and Makoto Konagai ¹ 1Department of Physical Electronics, Tokyo Institute of Technology, 2Quantum Nanoelectronics Research Center, Tokyo Institute of Technology, Japan
63-7	Barrier Layers Deposited at Low Temperature on Metal Carrier Foil for the Use in μc-Si Solar Cells M.Späth ¹ , J. Löffler ¹ , W. J. Soppe ¹ , C. Devilee ¹ , X. Niquille ² 1ECN Solar Energy, The Netherlands, 2Institut de Microtechnique, Université de Neuchâtel, Switzerland
63-8	Study on Growth Mechanism of Polycrystalline Silicon Films Deposited at Low Temperature Using SiCl_4/H_2 Xuanying Lin, Kuixun Lin, Yunpeng Yu, Rui Huang, Chuajun Huang, Junhong Wei, Zusong Zhu, Chuying Yu Department of Physics, Shantou University, China
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64-3	Evaluation on MPPT Methods of Photovoltaic Power Systems Li Jing ¹ , Dou Wei ¹ , Xu Zheng-guo ^{1,2} , Peng Yan-chang ^{1,2} , Xu Hong-hua ^{1,2} 1 Institute of Electrical Engineering, Chinese Academy of Sciences, China, 2 Beijing Corona Science & Technology Co. Ltd., China
64-4	Solar Panel Design, Manufacture and In-flight Performance for the Disaster Monitoring Constellation Rick Kimber ¹ , Guy Smekens ² , Carlo Flores ³ 1Surrey Satellite Technology Limited, University of Surrey, United Kingdom, 2ENE, Avenue van der, Belgium, 3CESI-ASP, Via, Italy
64-5	A Solar Pumping System of High Voltage, High Power and High Outflow Rate Lei Ting, Yu Guoguang, Gao Yan, Zhang Shengzhong, Wu Jinsheng, Li Weijiang Xinjiang Sunoasis Co., Ltd., China
64-6	PV Powered Biological Treatment & UV Disinfection Wastewater Recycling Josie Close ¹ , Jasper Ip, and Lam King-hang Centre of Renewable Energy, University of Hong Kong
64-7	Rate of Self-consumption of PV Output in a Residential House Shogo Nishikawa ¹ , Hiroyuki Sugihara ² 1College of Science and Technology, Nihon University, Japan, 2Kandenko co., Ltd., Japan
64-8	Construction of Photovoltaic Power Station in Suzhou Region and its Scenario Analysis Lingjun Zhang, Jinfeng Hu CSI solar Manufacture Inc. Building A6, Export processing zone, Suzhou New & Hitech distric, China
65-1	Development of Efficient Thin-Film Polycrystalline-Silicon Solar Cells based on Aluminium- Induced Crystallization I. Gordon, L. Carnel, D. Van Gestel, K. Van Nieuwenhuysen, G. Beaucarne, and J. Poortmans IMEC vzw, Belgium
65-2	Fabrication of Relatively High Growth Rate Microcrystalline Silicon Thin Films and Its Application in Solar Cells Gao Yantao Zhang Xiaodan Zhao Ying Sun Jian Zhu Feng Wei Changchun Wang Yan Han XiaoYan Institute of photo-electronic thin film devices and technology of Nankai University, China, Key Laboratory of Opto-electronic Information Science and Technology (Nankai University, Tianjin University), Ministry of Education, China
65-3	Influences of Discharge Power and Total Flow Rate in the High Rate Deposition of μc-Si:H Solar Cells by PECVD Y. Mai ^{1,2} , S. Klein ¹ , R. Carius ¹ , T. Repmann ¹ , X. Geng ² and F. Finger ¹ 1IPV, Forschungszentrum Jülich GmbH, Germany, Institute of Photoelectronics, Nankai University, China
65-4	Studies on Transport and Structural Properties of Si:H Network in the Amorphous-to-microcrystalline Transition Phase

	Sumita Mukhopadhyay, Romyani Goswami and Swati Ray Energy Research Unit, Indian Association for the Cultivation of Science, India
65-5	Light-induced Effects in Undoped Polycrystalline Silicon Films Prepared From SiCl₄/H₂ Mixture Zhu Zu-song Lin Xuan-ying Lin Kui-xun Qiu Gui-ming Huang Rui Yu yun-peng Wang Zhao-kui Wei Jun-hong Department of Physics, Shantou University, China,* Project supported by the State Key Development Program for Basic Research of China
65-6	Polycrystalline Silicon Thin Films by Solid Phase Crystallization for Solar Cell Applications Qi Wang ¹ , Paul Stradins, David L. Young, Bob Reedy, Yanfa Yan, Eugene Iwaniczko, and Howard M. Branz 1National Renewable Energy Laboratory
65-7	The Role of Oxygen in the Structural Properties of Microcrystalline Silicon Thin Films Zhang Xiaodan, Zhao Ying, Gao Yantao, Zhu Feng, Wei Changchun, Sun Jian, Chen Fei, Geng Xinhua, Xiong Shaozhen Institute of photo-electronic thin film devices and technology of Nankai University, Tianjin, Key Laboratory of photo-electronic thin film devices and technology of Tianjin, Tianjin, Key Laboratory of Opto-electronic Information Science and Technology, Ministry of Education, Tianjin
65-8	Hydrogen Induced Passivation of Fine-Grained Polycrystalline Silicon Films A. Slaoui, E. Pihan, I. Ka, N.A. Mbow, S. Roques, J.M. Koebel InESS-CNRS, France
66-1	Surface Morphology and Defects of Polycrystalline Silicon Thin Film Hu Yunfei ¹ , Guo Zhiqiu ³ , Liu Xiyun ³ Liang Zongcun ¹ Shen Hui ² 1 Guangzhou Institute of Energy Conversion, CAS, China, 2 Institute of Solar Energy System, Zhongshan University, China, 3College of Mechanical Engineering, South China University of Technology, China
66-2	New Concepts to Obtain High Efficiency Microcrystalline Silicon Solar Cells Made at High Deposition Rates Aad Gordijn, J.K.Rath*, R.E.I.Schropp Utrecht University, SID-Physics of Devices, The Netherlands
66-3	Investigation of Microcrystalline Silicon Film Prepared by Layer-By-Layer Technology HU Yue-Hui ^{1,2} , Zhang wen-Li ¹ Chen Guang-Hua ¹ 1 Department of Materials Science and Engineering, Beijing University of Technology, China, 2 Institute of Jingdezhen Ceramic, China
66-4	Controlling of the Structural Properties of Thin-film Crystalline Si by Ge Incorporation Kunihiro Kawamoto, Masaki Shima, Akira Terakawa, Kenji Murata and Makoto Tanaka Advanced Energy Research Center, Sanyo Electric Co., Ltd, Japan
66-5	Fabrication and Application Nanocrystalline Thin Film Deposited by PECVD Cai Hong-kun, Zhang De-xian, Feng Kai, Qi Long-yin, Sun Yun Department of Information Technology and Science, Nankai University, China
66-6	Nanocrystalline Silicon Film Characteristics at Low Temperature by RF-sputtering Meng F.Y., Tang D.Y, Lin S.Q., Si X.W., Yu H.C., Cui R.Q. Department of Physics, Shanghai Jiao Tong University, China
66-7	Influence of p-layer on Characteristics of Absorber Layer and Microcrystalline Silicon Thin Film Solar Cells Swati Ray, Koel Adhikary, Amartya Chowdhury and Sumita Mukhopadhyay Energy Research Unit, Indian Association for the Cultivation of Science, adavpur, India
66-8	Effects of Hydrogen on the Properties in Nanocrystalline Silicon Films by RF-Sputtering Meng F.Y., Sun T.T., Si X.W., Tang D.Y., Xu L., Zhou Z.B. Cui R.Q Department of Physics, Shanghai Jiao Tong University, China
67-1	N-Type Multicrystalline Silicon Solar Cells: PERC Design for High Efficiency J. Libal ¹ , R. Petres ¹ , R. Kopecek ¹ , G. Hahn ¹ , M. Vetter ² , I. Roevert ³ , K. Wambach ³ , P. Fath ¹ 1University of Konstanz, Faculty of Sciences, Department of Physics, Germany, 2Universitat Politècnica de Catalunya, Dept. Enginyeria Electronica, Spain 3Deutsche Solar AG, Germany
67-2	Minimization of the Shadow-like Losses for Interdigitated Back-Junction Solar Cells

	Frédéric Dross, Emmanuel Van Kerschaver, Guy Beaucarne Silicon Solar Cell group, IMEC, Belgium
67-3	Ultra-Large 20 × 20 cm² Multi-Crystalline Solar Cells With Spray-On Emitter B. Herzog, E. Rüländ and P. Fath University of Konstanz, Faculty of Sciences, Department of Physics, Germany
67-4	Rapid Thermal Process Phosphorus-Gettering of Multicrystalline Silicon for Solar Cells Xin Zhu, Jinxue Chen, Zhenqiang Xi, Deren Yang, Duanlin Que State Key Laboratory of Silicon Materials, Zhejiang University, China
67-5	Lead Free Silver Front Contact Pastes for SiN_x Coated Polycrystalline Silicon Solar Cells S. Sridharan ^{1*} , S. Kim ² , C. Khadilkar ¹ , A. Shaikh ² , and D. Gnizak ¹ 1Ferro Corporation, Posnick Center for Innovative Technology, USA, 2 Ferro Corporation, Electronic Materials System, USA
67-6	One Lead-Free Aluminum Paste Used for Back Surface Field Electrode of Crystalline Silicon Solar Cells Ding Bingbing Guangzhou Ruxing Technology Development Co., Ltd Guangzhou Research Institute of Synthetic Materials, China
67-7	Electronic Transport Properties of B-doped Polycrystalline Silicon Thin Films Prepared on Quartz Substrates Ai Bin ¹ , Shen Hui ¹ , Kong Guanglin ² , Liao Xianbo ² 1Institute for Solar Energy System, Energy Engineering Academy, Sun Yat-Sen University, China, 2State Key Laboratory for Surface Physics, Institute of Semiconductors, Chinese Academy of Sciences, China
67-8	Passivation of Silicon Solar Cell by Rapid Thermal Processing of Hydrogenated Films of Silicon Nitride Kyunghae Kim, S. K. Dhungel, Jinsu Yoo, M. Gowtham, Sungwook Jung, O. P. Igor, J.Yi School of information and Communication Engineering, Sungkyunkwan University, Korea
68-1	AFORS-HET, Version 2.1, a Numerical Computer Program for Simulation of (thin film) Heterojunction Solar Cells R. Stangl ^{1*} , M. Kriegel ¹ , D. Schaffarzik ¹ , M. Schmidt ¹ 1Hahn-Meitner Institute Berlin (HMI), Germany
68-2	Simulation and Comparison of Theoretical Possibilities of In_xGa_{1-x}N/InSb and In_xGa_{1-x}N Tandem Cells Hasna Hamzaoui, Ahmed S. Bouazzi & Bahri Rezig PV & Semicond. Mat. Lab. –ENIT, University of Tunis El Manar, Tunisia
68-3	A-Si:H Passivation Scheme for Monocrystalline Silicon Thin-Film Solar Cells Applying the PSI-process Heiko Plagwitz, Andreas Wolf, Barbara Terheiden, and Rolf Brendel Institut fuer Solarenergieforschung GmbH Hameln/Emmerthal (ISFH), Germany
68-4	Electrical Properties of 10×10 cm² HIT Solar Cells with Screen-printed Metal Grids Manufactured on Textured p-type mc-Si Substrates M. Scherff ¹ , H. Windgassen ² , Y. Ma ^{1*} , H. Stiebig ³ , T. Mueller ¹ , W. R. Fahrmer ¹ 1: Chair of Electronic Devices, University of Hagen, Germany, 2: Chair and Institute of Semiconductor Electronics, Aachen University, Germany, 3: Institute of Photovoltaics, Research Centre Jülich, Germany
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69-1	<u>Indicator of Evaluation Performance of Photovoltaic Systems</u> Yang Jinhuan, Tan Beiyu, Ge Liang, Chen Zhonghua, Jiang Xiuli, Gao Lanxiang Solar Energy Research Group, Shanghai University of Electric Power, China
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69-3	<u>Simulation of PV Module Connection Method to Minimize the Output Lowering of the Shaded PV Array</u> Masaaki Inoue, Sanshiro Yamanaka, Hajime Kawamura, Hideyuki Ohno, Hideaki Kawamura Department of Electrical and Electronic Engineering, Meijo University, Japan
69-4	<u>Recycling Loop Test of the Expanded 16-cells Recyclable PV-module</u> Takuya DOI ¹ , Sanekazu IGARI ² , Izumi TSUDA ³ , Koichi SAKUTA ⁴ 1Research Center for Photovoltaics, National Institute of Advanced Industrial Science and Technology (AIST) AIST Central 2, Japan, 2Research Center for Photovoltaics, National Institute of Advanced Industrial Science and Technology (AIST) AIST Central 2, Japan, 3Technology Information Department, National Institute of Advanced Industrial Science and Technology (AIST) AIST Central 2, Japan, 4Research Center for Photovoltaics, National Institute of Advanced Industrial Science and Technology (AIST) AIST Central 2, Japan
69-5	<u>The Optimum Output and Cost Selection Of Versatile Production in PV Modules Enterprise</u> Shi Shanglin ¹ , Zuoyan ² 1Xi'an REW Co., Ltd, China
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69-7	<u>Resonant Ballast for Photovoltaic Powered Street Lighting System in Remote Rural Area</u> Tanes Tanitteerapan and Suriyan Pan-A Power Electronics and Circuit Systems Laboratory, Department of Electrical Technology Education, King Mongkut's University of Technology Thonburi, Thailand
69-8	<u>Design and Evaluation of High-performance Solar Electric Car</u> DENG Tao ^{1,2,3} , SHEN Hui ^{1,2} , WANG donghai ^{1,2} , DENG youjun ^{1,2} 1School of Physics Science and Engineering, Sun Yat-sen University, China, 2Institute for Solar Energy System, Sun Yat-sen University, China, 3Solar Energy Research Center for Sun Yat-sen University and Bailixing, China
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70-2	<u>Investigations on the Structural Properties of Sprayed In₂O₃ Films</u> P. Prathap, Y. P. V. Subbaiah, M. Devika and K. T. Ramakrishna Reddy* *Thin Film Laboratory, Department of Physics, Sri Venkateswara University, India
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	<p>Ma LiFen^{1,2} Gou XianFang^{1,2} XuYing² Li XuDong² Wang WenJing² Ren BingYan¹ 1. institute of information functional materials, hebei university of technology, China, 2. Beijing Solar Energy Research Institute, 3 # Hua Yuan Road, Hai Dian District Beijing, China</p>
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P-41	Heat-Treatment Effect on Enhancement of Device Efficiency of Poly(3-hexylthiophene) /Methanofullerene Bulk Heterojunction Photovoltaic Cells Heejoo Kim ¹ , Sang-Jin Moon ² 1Korea Research Institute of Chemical Technology (KRICT), Korea, 2 Korea Research Institute of Chemical Technology (KRICT), Korea
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P-53	The Effect of ZnO/Metal Back Reflector on Thin Film Micromorph Solar Cell Wei Changchun, Zhu Feng, Zhao Ying, Xu Buheng, Chen Xinliang, Gao Yantao, Su Jian, Zhang Xiaodan, Ren Huizhi, Xue Junming, Geng Xinhua Institute of photo-electronics thin film devices and technique of Nankai University, Key Laboratory of photo-electronics thin film devices and technique of Tianjin, Key Laboratory of Opto-electronic Information Science and Technology
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P-58	CuIn(S,Se)₂ Thin Films Prepared by Thermal Crystallization from Cu-In-Se Precursor in S/Se Atmosphere and Their Photovoltaic Applications Toshiyuki Yamaguchi ¹ , Takuya Ishibashi ¹ , Shigetoshi Niiyama ² , Toshihito Imanishi ² 1Department of Electrical and Computer Engineering, Wakayama College of Technology, Japan, 2Wakayama Industrial Technology Center, Japan
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