

Program Outline

	Nov. 05, 2012	Nov. 06, 2012	Nov. 07, 2012	Nov. 08, 2012	Nov. 09, 2012
Morning	Opening Ceremony	Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
	Plenary Lectures				
	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break
	Plenary Lectures	Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
	Lunch	Lunch	Lunch	Lunch	
Afternoon	PVSEC Award Ceremony	Parallel Sessions	Parallel Sessions	Parallel Sessions	
	Tea Break	Tea Break	Tea Break	Tea Break	
	Plenary Lectures	Parallel Sessions	Poster Session (area 1, 2, 5 &6)	Poster Session (area 3 & 4)	
Evening			Conference Banquet		

The PVSEC-22 now concerns 6 areas:

- 1 - Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells;
- 2 - Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells;
- 3 - Compound Semiconductor Thin-Film Solar Cells;
- 4 - Advanced Solar Cells: New Concepts, Materials and Structures;
- 5 - Components of PV System;
- 6 - PV System.

Outline of Oral Presentations in Parallel Sessions

Tuesday, Nov. 06, 2012					
Room 1		Room 2		Room 3	
8:30-8:55	1-I-1	8:30-8:55	3-I-1	8:30-8:55	4-I-1
8:55-9:10	1-O-1	8:55-9:10	3-O-1	8:55-9:10	4-O-1
9:10-9:25	1-O-2	9:10-9:25	3-O-2	9:10-9:25	4-O-2
9:25-9:40	1-O-3	9:25-9:40	3-O-3	9:25-9:40	4-O-3
9:40-9:55	1-O-4	9:40-9:55	3-O-4	9:40-9:55	4-O-4
9:55-10:10	1-O-5	9:55-10:10	3-O-5	9:55-10:10	4-O-5
Tea break		Tea break		Tea break	
10:30-10:55	1-I-2	10:30-10:55	3-I-2	10:30-10:55	4-I-2
10:55-11:10	1-O-6	10:55-11:10	3-O-6	10:55-11:10	4-O-6
11:10-11:25	1-O-7	11:10-11:25	3-O-7	11:10-11:25	4-O-7
11:25-11:40	1-O-8	11:25-11:40	3-O-8	11:25-11:40	4-O-8
11:40-11:55	1-O-9	11:40-11:55	3-O-9	11:40-11:55	4-O-9
Lunch		Lunch		Lunch	

13:30-13:55	1-I-3	13:30-13:55	3-I-3	13:30-13:55	4-I-3
13:55-14:10	1-O-10	13:55-14:10	3-O-10	13:55-14:20	4-I-4
14:10-14:25	1-O-11	14:10-14:25	3-O-11	14:20-14:35	4-O-10
14:25-14:40	1-O-12	14:25-14:40	3-O-12	14:35-14:50	4-O-11
14:40-14:55	1-O-13	14:40-14:55	3-O-13	14:50-15:05	4-O-12
14:55-15:10	1-O-14	14:55-15:10	3-O-14	15:05-15:20	4-O-13
15:10-15:25	1-O-15	15:10-15:25	3-O-15	15:20-15:35	4-O-14
15:25-15:40	1-O-16	15:25-15:40	3-O-16		
Tea break		Tea break		Tea break	
16:00-16:25	1-I-4	16:00-16:25	3-I-4	16:00-16:25	2-I-1
16:25-16:40	1-O-17	16:25-16:40	3-O-17	16:25-16:40	2-O-1
16:40-16:55	1-O-18	16:40-16:55	3-O-18	16:40-16:55	2-O-2
16:55-17:10	1-O-19	16:55-17:10	3-O-19	16:55-17:10	2-O-3
17:10-17:25	1-O-20	17:10-17:25	3-O-20	17:10-17:25	2-O-4
17:25-17:40	1-O-21	17:25-17:40	3-O-21	17:25-17:40	2-O-5
17:40-17:55	1-O-22	17:40-17:55	3-O-22	17:40-17:55	2-O-6
Wednesday, Nov. 07, 2012					
Room 1		Room 2		Room 3	
		8:00-8:25	6-I-1		

8:15-8:40	1-I-5	8:25-8:40	6-O-1		
8:40-8:55	1-O-23	8:40-8:55	6-O-2	8:30-8:55	2-I-2
8:55-9:10	1-O-24	8:55-9:10	6-O-3	8:55-9:10	2-O-7
9:10-9:25	1-O-25	9:10-9:25	6-O-4	9:10-9:25	2-O-8
9:25-9:40	1-O-26	9:25-9:40	6-O-5	9:25-9:40	2-O-9
9:40-9:55	1-O-27	9:40-9:55	6-O-6	9:40-9:55	2-O-10
9:55-10:10	1-O-28	9:55-10:10	6-O-7	9:55-10:10	2-O-11
Tea break		Tea break		Tea break	
10:30-10:55	1-I-6	10:30-10:55	6-I-2	10:30-10:55	2-I-3
10:55-11:10	1-O-29	10:55-11:10	6-O-8	10:55-11:10	2-O-12
11:10-11:25	1-O-30	11:10-11:25	6-O-9	11:10-11:25	2-O-13
11:25-11:40	1-O-31	11:25-11:40	6-O-10	11:25-11:40	2-O-14
11:40-11:55	1-O-32	11:40-11:55	6-O-11	11:40-11:55	2-O-15
11:55-12:10	1-O-33	11:55-12:10	6-O-12	11:55-12:10	2-O-16
Lunch		Lunch		Lunch	
13:30-13:55	4-I-5	13:30-13:55	3-I-7	13:30-13:55	2-I-4
13:55-14:10	4-O-15	13:55-14:10	3-O-23	13:55-14:10	2-O-17
14:10-14:25	4-O-16	14:10-14:25	3-O-24	14:10-14:25	2-O-18
14:25-14:40	4-O-17	14:25-14:40	3-O-25	14:25-14:40	2-O-19
14:40-14:55	4-O-18	14:40-14:55	3-O-26	14:40-14:55	2-O-20
14:55-15:10	4-O-19	14:55-15:10	3-O-27	14:55-15:10	2-O-21
15:10-15:25	4-O-20	15:10-15:25	3-O-28	15:10-15:25	2-O-22

Tea break		Tea break		Tea break	
16:00-18:00	Poster (Areas 1,2,5 & 6)				
18:30-20:30	Conference Banquet				
Thursday, Nov. 08, 2012					
Room 1		Room 2		Room 3	
				8:00-8:25	5-I-1
8:25-8:40	1-O-34	8:15-8:40	3-I-5	8:25-8:40	5-O-1
8:40-8:55	1-O-35	8:40-8:55	3-O-29	8:40-8:55	5-O-2
8:55-9:10	1-O-36	8:55-9:10	3-O-30	8:55-9:10	5-O-3
9:10-9:25	1-O-37	9:10-9:25	3-O-31	9:10-9:25	5-O-4
9:25-9:40	1-O-38	9:25-9:40	3-O-32	9:25-9:40	5-O-5
9:40-9:55	1-O-39	9:40-9:55	3-O-33	9:40-9:55	5-O-6
9:55-10:10	1-O-40	9:55-10:10	3-O-34	9:55-10:10	5-O-7
Tea break		Tea break		Tea break	
10:30-10:45	1-O-41	10:30-10:55	3-I-6	10:30-10:55	5-I-2
10:45-11:00	1-O-42	10:55-11:10	3-O-35	10:55-11:10	5-O-8
11:00-11:15	1-O-43	11:10-11:25	3-O-36	11:10-11:25	5-O-9

11:15-11:30	1-O-44	11:25-11:40	3-O-37	11:25-11:40	5-O-10
11:30-11:45	1-O-45	11:40-11:55	3-O-38	11:40-11:55	5-O-11
11:45-12:00	1-O-46	11:55-12:10	3-O-39	11:55-12:10	5-O-12
Lunch		Lunch		Lunch	
13:30-13:55	1-I-7	13:30-13:55	2-I-5	13:30-13:45	4-O-21
13:55-14:10	1-O-47	13:55-14:10	2-O-23	13:45-14:00	4-O-22
14:10-14:25	1-O-48	14:10-14:25	2-O-24	14:00-14:15	4-O-23
14:25-14:40	1-O-49	14:25-14:40	2-O-25	14:15-14:30	4-O-24
14:40-14:55	1-O-50	14:40-14:55	2-O-26	14:30-14:45	4-O-25
14:55-15:10	1-O-51	14:55-15:10	2-O-27	14:45-15:00	4-O-26
15:10-15:25	1-O-52	15:10-15:25	2-O-28	15:00-15:15	4-O-27
15:25-15:40	1-O-53	15:25-15:40		15:15-15:30	4-O-28
Tea break		Tea break		Tea break	
16:00-18:00	Poster (areas 3 & 4)				
Friday, Nov. 09, 2012					
Room 1		Room 2		Room 3	
8:20-8:45	2-I-6	8:30-8:45	3-O-40		
8:45-9:00	2-O-29	8:45-9:00	3-O-41	8:30-8:55	4-I-6

9:00-9:15	2-O-30	9:00-9:15	3-O-42	8:55-9:10	4-O-29
9:15-9:30	2-O-31	9:15-9:30	3-O-43	9:10-9:25	4-O-30
9:30-9:45	2-O-32	9:30-9:45	3-O-44	9:25-9:40	4-O-31
9:45-10:00	2-O-33	9:45-10:00	3-O-45	9:40-9:55	4-O-32
Tea break		Tea break		Tea break	
10:30-10:45	2-O-34			10:30-10:45	4-O-33
10:45-11:00	2-O-35			10:45-11:00	4-O-34
11:00-11:15	2-O-36			11:00-11:15	4-O-35
11:15-11:30	2-O-37			11:15-11:30	4-O-36
11:30-11:45	2-O-38			11:30-11:45	4-O-37
11:45-12:00	2-O-39			11:45-12:00	4-O-38

The PVSEC-22 Program

Remarks:

- (1) Please check if the information regarding your oral or poster presentation is correct. In case there is anything wrong, please kindly inform us via PVSEC22@edu.zju.cn.
- (2) If you can not find your accepted presentation after search for the ENTIRE file, please also kindly inform us via PVSEC22@edu.zju.cn.
- (3) Plenary talk: 40 min (5-10 min discussion); Invited talk: 25 min (5 min discussion); Oral Presentation: 15 min (3 min discussion). Poster size: 90 cm in width and 210 cm in height.

Monday, November 05, 2012

Monday, November 05, 2012		
8:30-8:50	Opening Session	Opening address <u>Dinghuan Shi</u> Welcome address <u>Wei Yang</u>
8:50-9:30	Plenary talk 1	China photovoltaic industry development status and prospects <u>Yuwen Zhao</u> <i>Beijing Institute for SolarEnergy, China</i>
9:30-10:10	Plenary talk 2	Global cooperation for a sustainable PV sector –selected activities and results from the IEA PVPS Programme <u>Stefan Nowak</u> <i>IEA PVPS</i>
10:10-10:40	Tea break	
10:40-11:20	Plenary talk 3	Silicon Solar Cells: Recent Progress and Future Directions <u>Martin Green</u> <i>University of New South Wales, Australia</i>
11:20-12:00	Plenary talk 4	Progress of Panasonic's R&D on Advanced Photovoltaic Technologies <u>Shigeo Yata</u> <i>Panasonic Corporation, Japan</i>
12:00-13:30	Lunch	

13:30-13:50	PVSEC Award Ceremony	Chairperson: <u>Yin Zhao</u>
13:50-14:20	Award Speech 1	
14:20-14:50	Award Speech2	
14:50-15:20	Tea break	
15:20-16:00	Plenary talk 5	Concentrator Photovoltaics : A Technology Providing Highest Efficiencies and Low Cost <u>Andreas W. Bett</u> <i>Fraunhofer-Institut für Solare Energie systeme, Germany</i>
16:00-16:40	Plenary talk 6	Commercialization of Polycrystalline CdTe Thin-Film Photovoltaic Technologies <u>Xuanzhi Wu</u> <i>Advanced SolarPower, China</i>
16:40-17:20	Plenary talk 7	Solar Energy Conversion in Mesoscopic Systems <u>Md. K. Nazeeruddin</u> <i>EPFL, Switzerland</i>
17:20-18:00	Plenary talk 8	Progress and challenges in the intermediate band solar cell <u>Antonio Luque</u> <i>Universidad Politecnica de Madrid, Spain</i>
18:00-18:40	Plenary talk 9	Going back to the Beginning: What is the PV System? - A Message from PVResQ! <u>Kazuhiko Kato</u> <i>AIST, Japan</i>

Tuesday, November 06, 2012

	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
8:30-8:55	Growth of high-quality Si multicrystalline ingots	Outline of Europe-Japan Collaborative Research	High Efficiency and Low Cost Dye-sensitized Solar

	for solar cells using Dendritic casting method and Noncontact crucible method 1-I-1 <u>Kazuo Nakajima</u> ¹ , Ryota Murai ¹ , Kohei Morishita ¹ , Kentaro Kutsukake ² , Noritaka Usami ² 1. Kyoto University, Japan 2. IMR, Tohoku University, Japan	on Concentrator Photovoltaics 3-I-1 <u>Masafumi Yamaguchi</u> ¹ , Antonio Luque ² 1. Toyota Technological Institute, Japan 2. University Polytechnic Madrid, Spain	Cells 4-I-1 Mingxing Wu, Wei Guo, Liang Wang, <u>Tingli Ma</u> Dalian University of Technology, China
8:55-9:10	Comparison of Impurity Testing Methods for Silicon Purification 1-O-1 <u>Jian Chen</u> , Songyuan Dai Chinese Academy of Sciences, Chinese	InGaN/GaN MQWs-based concentrator solar cells with high open-circuit voltage 3-O-1 <u>Xinhe Zheng</u> , Xuefei Li, Dongyan Zhang, Yuanyuan Wu, Hui Yang Chinese Academy of Sciences, China	Back contact dye-sensitized solar cells with transparent conductive oxide layer less (TCO-less) structure 4-O-1 <u>Yuhei Ogomi</u> , Terumi Nishimura, Jun Usagawa, Takeshi Kogo, Shaym S. Pandey, Shuzi Hayase Kyushu Institute of Technology, Japan
9:10-9:25	Dopant and carrier concentration imaging of silicon wafers by a photoluminescence technique 1-O-2 <u>S. Y. Lim</u> ¹ , X. Zhang ¹ , M. Forster ² , J. Holtkamp ³ , M.C. Schubert ³ , A. Cuevas ¹ , D. Macdonald ¹ 1. The Australian National University, Australia 2. APOLLON SOLAR, France 3. Fraunhofer Institut für Solare Energiesysteme, Germany	Effect of chassis thickness on 820X CPV performance in outdoor condition 3-O-2 <u>Yasuyuki Ota</u> ¹ , Tsuyoshi Suetō ¹ , Hirokazu Nagai ² , Kenji Araki ² , Kensuke Nishioka ¹ 1. University of Miyazaki, Japan 2. Daido steel, Japan	Surface Modification of Decomposition Reaction on the TiO₂ surface to enhance the dye-sensitized solar cells performance 4-O-2 <u>Molang Cai</u> , Xu Pan, Songyuan Dai Chinese Academy of Sciences, China
9:25-9:40	Acceptor-related metastable defects in compensated n-type silicon for solar cells 1-O-3 <u>F. E. Rougieux</u> ¹ , D. Macdonald ¹ , A. Cuevas ¹ , J. Schmidt ² , B. Lim ² 1. The Australian National University, Australia 2. Institute for Solar Energy Hameln (ISFH), Germany	Analysis and Optimization of Broadband Antireflective Coatings for III-V Multi-junction Solar Cells 3-O-3 <u>Rui Fu</u> , Jielei Tu, Xiangjing Xiao, Qilin Hua, Peikun Zhao, Hongyan Bai Yunnan Normal University, China	Post-additional annealing effect in polymer solar cells based on regioregular Poly(3-hexythiophene) and Fullerenes 4-O-3 <u>Xuan Yu</u> , Ziyang Hu, Xiaoming Yu, Jianjun Zhang Nankai University, China
9:40-9:55	High quality multi-crystalline silicon by directional-solidification growth for solar cells	Research pulsed laser deposition prepared CZTS thin film characteristics	Smart interface management to implement a high quality strain balanced super-lattice solar

	1-O-4 <u>Peng Wang</u> , Juan Li, Rui Zhai, Zhidong Zheng <i>Zhejiang Yuhui Solar Energy Sources Co., China</i>	3-O-4 <u>Wen-Shiang Tsai</u> , Ching-Hsiang Chiu, Tung-Tung Chen, Horng-Show Koo, Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>	cell 4-O-4 <u>Yunpeng Wang</u> , ShaoJun Ma, Hassanet Sodabanlu, Hirosama Fujii, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano <i>The University of Tokyo, Japan</i>
9:55-10:10	The future of quasi-monocrystalline silicon 1-O-5 <u>Zhidong Zheng</u> <i>Renesola Ltd. & Sciborn Research Institute, China</i>	Effect of different Selenium annealing temperatures on the green synthetic route chemical bath deposited ZnS thin films 3-O-5 <u>G. L. Agawane</u> ¹ , Seung Wook Shin ² , K. V. Gurav ¹ , A. V. Moholkar ³ , Jeong Yong Lee ² and Jin Hyeok Kim ¹ <i>1. Chonnam National University, Republic of Korea</i> <i>2. KAIST, Republic of Korea</i> <i>3. Shivaji University, India</i>	Graphene like carbon films and its properties for photovoltaic solar cells 4-O-5 <u>Sudip Adhikari</u> ¹ , H.R. Aryal ¹ , M.S. Kayastha ¹ , D. C. Ghimire ¹ , S. Adhikary ² , H. Uchida ¹ , K. Wakita ¹ , M. Umeno ¹ <i>1. Chubu University, Japan</i> <i>2. Tribhuvan University, Nepal</i>
10:10-10:30	Tea Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
10:30-10:55	On The Development of High-Quality Multi-crystalline Silicon for Photovoltaic Industry 1-I-2 <u>C.W. Lan</u> ¹ , W.C. Lan ² , A. Yu ² , Y. M. Yang ² , W.C. Hsu ² , B. Hsu ² , A. Yang ³ <i>1. National Taiwan University, Taiwan</i> <i>2. Sino-American Silicon Productions Inc., Taiwan</i> <i>3. Solartech Energy Inc., Taiwan</i>	Study of Thin-Film Solar Cells Using Solar Spectrum Splitting Technique 3-I-2 <u>Sinae Kim</u> ¹ , Takiguchi Yuki ¹ , Shunsuke Kasashima ¹ , Porponth Sichanugrist ¹ , Taizo Kobayashi ² , Tokio Nakada ² , Makoto Konagai ¹ <i>1. Tokyo Institute of Technology, Japan</i> <i>2. Aoyama Gakuin University, Japan</i>	Photocurrent Generation Mechanism of Lateral Bulk-heterojunction Organic Solar Cells 4-I-2 Jong Hwan Park, Min Kim, <u>Kilwon Cho</u> <i>Pohang University of Science and Technology, Republic of Korea</i>
10:55-11:10	Reconditioning of silicon substrates for manifold re-use in the layer transfer process with porous silicon 1-O-6 <u>Verena Steckenreiter</u> ¹ , Jan Hensen ¹ , Alwina	Phosphorus doping of BaSi₂ by ion implantation 3-O-6 <u>Kosuke O. Hara</u> ^{1,2} , Yusuke Hoshi ¹ , Noritaka Usami ^{1,2} , Yasuhiro Shiraki ³ , Kotaro Nakamura ⁴ , Kaoru Toko ⁴ , Takashi Suemasu ^{2,4}	Plasma synthesis of silicon quantum dots and application to organic/inorganic hybrid photovoltaics 4-O-6 <u>Yi Ding</u> , Ryan Gresback, Ken Okazaki, Tomohiro

	Knorr¹, Enrique Garralaga Rojas^{1,2}, Sarah Kajari-Schröder¹, Rolf Brendel^{1,2} 1. Institute for Solar Energy Research Hamelin (ISFH), Germany 2. University of Hannover, Germany	1. Tohoku University, Japan 2. JST-CREST, Japan 3. Tokyo City University, Japan 4. University of Tsukuba, Japan	Nozaki Tokyo Institute of Technology, Japan
11:10-11:25	An investigation of dislocations in multicrystalline silicon: Distribution and interaction with grain boundaries 1-O-7 <u>Jun Chen</u>, Jianyong Li, Ronit R. Prakash, Karolin Jiptner, Yoshiji Miyamura, Hirofumi Harada, Takashi Sekiguchi National Institute for Materials Science, Japan	Characterization of ZnS thin films prepared by sulfurization of Zn film with sulfur cracker 3-O-7 <u>Ju-Hee Kim</u>^{1,2}, Dae-Hyung Cho¹, Jeha Kim³, Soo-Jeong Park^{1,2}, Yong-Duck Chung^{1,2} 1. Electronics and Telecommunications Research Institute, Republic of Korea 2. University of Science and Technology, Republic of Korea 3. Cheongju University, Republic of Korea	Solution Processed Thin Film Encapsulation for Organic Solar Cells 4-O-7 <u>HeeJae Lee</u>, HyeongPil Kim, HyoMin Kim, Jun Ho Youn, Mi Sun Ryu, Abd Rashid bin Mohd Yusoffi, Jin Jang Kyung Hee University, Republic of Korea
11:25-11:40	Cathodoluminescence investigation on nitrogen and carbon related precipitates in cast multicrystalline silicon 1-O-8 <u>Jianyong Li</u>^{1,2}, Ronit Roneel Prakash², Dierre Benjamin², Jun Chen², Takashi Sekiguchi², Hirofumi Harada², Yoshiji Miyamura², Koichi Kakimoto³, Yoshio Ohshita⁴, Atsushi Ogura¹ 1. Meiji University, Japan 2. National Institute for Materials Science, Japan 3. Kyushu University, Japan 4. Toyota Technological Institute, Japan	Effect of S/(S+O) Ratio of ZnO_{1-x}S_x Buffer Layer for Tin(II) Sulde Thin Film Solar Cells 3-O-8 <u>Yu Kawano</u>, Takashi Minemoto Ritsumeikan University, Japan	Flexible organic solar cells fabricated utilizing AZO/Ag/AZO multilayer electrode 4-O-8 <u>Yongzhi Zhang</u>, Fushan Li, Chaoxing Wu, Tailiang Guo Fuzhou University, China
11:40-11:55	Evaluation of crystalline silicon ingots fabricated under suppressed wettability 1-O-9 <u>T. Tachibana</u>^{1,2}, Y. Tsuchiya¹, N. Miyazaki¹, S. Sakuragi³, A. Ogura¹ 1. Meiji University, Japan	Patterned characteristics and preparation of indium-tin oxide films on flexible PET substrate for photovoltaic applications 3-O-9 <u>Xing-Yang Liu</u>¹, Hsin-Chi Chang¹, Chin-Lung Chiou¹, Horng-Show Koo¹, Shung-Jim Yang², Mi Chen¹	Surface plasmon enhanced bulk heterojunction organic solar cells with Au nanoparticles prepared by a micellar method 4-O-9 <u>HongLi Gao</u>, XingWang Zhang, ZhiGang Yin, HaiRen Tan, Yun Gao

	2. JSPS Research Fellow 3. Union Materials Inc., Japan	1. Minghsin University of Science and Technology, Taiwan 2. Vanung University, Taiwan	Chinese Academy of Sciences, China
11:55-13:30	Lunch Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
13:30-13:55	Toward High Efficiency Silicon Solar Cells Using a Newly Developed Seed-Cast Method 1-I-3 <u>Koichi Kakimoto</u> ¹ , Bing Gao ¹ , Satoshi Nakano ¹ , Hirofumi Harada ² , Hirofumi Harada ² and Hirofumi Harada ² 1. RIAM, Kyushu University, Japan 2. NIMS, Japan	Achievement of over 18% efficiency with a small-sized Cu(InGa)(SeS)₂ solar cells prepared by sulfurization after selenization process with Zn-based buffer 3-I-3 <u>Kouji Yamaguchi</u> ¹ , Yusuke Oda ¹ , Motoshi Nakamura ¹ , Yoshiyuki Chiba ¹ , Hideki Hakuma ¹ , Taizo Kobayashi ² and Tokio Nakada ² 1. Showa Shell Sekiyu K.K., Japan 2. Aoyama Gakuin University, Japan	High efficiency a-Si single-junction and a-Si/microcrystalline-Si tandem solar cells with W-textured ZnO deposited on etched glass 4-I-3 Feng Gong, Gang Zhou, <u>Zhong-Sheng Wang</u> Fudan University, China
13:55-14:10	On mechanical behavior of silicon wafers cut by diamond wire saws 1-O-10 <u>Hong-Cheng Meng</u> ¹ , Lang Zhou ¹ , Van Vooren Wim ² 1. Nanchang University, China 2. NV Bekaert SA, Belgium	Thiourea concentration effect by chemically deposited on CIGS solar cell 3-O-10 <u>Yi-Chen Lin</u> ¹ , Zue-Chin Chang ² , Fuh-Sheng Shieu ¹ 1. National Chin-Yi University of Technology, Taiwan 2. National Chung Hsing University, Taiwan	Highly Efficiency Dye-sensitized Solar Cells 4-I-4 (13:55-14:20) <u>Liyuan Han</u> , Ashraful Islam, Masatoshi Yanagida National Institute for Materials Science, Japan
14:10-14:25	Control of the Solidification Front Surface in an Industrial Seeded Directional Solidification for Quasi-single Crystalline Silicon Ingots 1-O-11 <u>Lijun Liu</u> ¹ , Qinghua Yu ¹ , Genxiang Zhong ^{1,2} , Xinming Huang ² 1. Xi'an Jiaotong University, China 2. Donghai JA Solar Technology Co., Ltd., China	Atomic layer deposition of Zn(O,S) buffers for sequentially grown Cu(In,Ga)(S,Se)₂ solar cells within NeuMaS project 3-O-11 <u>Saoussen Merdes</u> ¹ , Ville Malinen ² , Iver Lauermann ¹ , Frank Hergert ³ , Andreas Flückiger ⁴ , Niklas Papathanasiou ¹ , R. Schlattmann ¹ 1. Helmholtz-Zentrum Berlin, Germany	Titanium oxide mesoporous spheres as building blocks for high efficiency dye-sensitized solar cells 4-O-10 (14:20-14:35) <u>Yi-Bing Cheng</u> , Fuzhi Huang, Yang Chen, Dehong Chen, Rachel A. Caruso Monash University, Australia The University of Melbourne, Australia

		2. <i>Beneq Oy, Finland</i> 3. <i>Bosch Solar CISTech GmbH, Germany</i> 4. <i>Centrotherm Photovoltaics AG, Germany</i>	
14:25-14:40	First-principles study of interstitial boron and oxygen dimer(B_iO_{2i}) complex in Silicon 1-O-12 <u>Xianzi Chen</u>, Xuegong Yu, Xiaodong Zhu, Peng Chen, Deren Yang <i>Zhejiang University, China</i>	Performance enhancement of Submicron $Cu(In,Ga)Se_2$ solar cells by additional $CuGaSe_2$ thin layer 3-O-12 <u>Chuanming Xu</u>, Zhangyi Cao, Xianfang Ma, Xiaoshun Wang, Min Wu <i>Shanghai Institute of Space Power-sources, China</i>	Synthesis of Organic Dyes for Dye Sensitized Solar Cells 4-O-11 (14:35-14:50) <u>Ciaran Lyons</u>¹, Michael Graetzel², K. Ravindranathan Thampi¹ 1. <i>UCD Dublin, Ireland</i> 2. <i>École Polytechnique Fédérale de Lausanne, Switzerland.</i>
14:40-14:55	Analysis of solar silicon wafer surface damage layer 1-O-13 <u>Jianmin Li</u>, Jianting Gao, Xuewen Huang, You Tang, Hongping Fu, Cunxin Zhang, Jinbing Zhang, Kengo Nakano <i>LDK solar Co., Ltd, China</i>	Surface Passivation of $Cu(In,Ga)Se_2$ Using Atomic Layer Deposited Al_2O_3 and the Application in TFTs 3-O-13 <u>Wen-Wei Hsu</u>, Xiaobo Zhu, , CheeWee Liu <i>National Taiwan University, Taiwan</i>	Module design for large-scale dye-sensitized solar cell 4-O-12 (14:50-15:05) <u>Yang Huang</u>, Songyuan Dai <i>Chinese Academy of Sciences, China</i>
14:55-15:10	Large-size and complete single crystal growth of monocrystalline silicon by using seed cast-grown technique 1-O-14 <u>B. Gao</u>¹, H. Harada², Y. Miyamura², S. Nakano¹, K. Kakimoto¹ 1. <i>Kyushu University, Japan</i> 2. <i>National Institute for Materials Science, Japan</i>	Deposition and characterization of ZnO, ZnO:Al thin films deposited by RF-sputtering for $Cu(In,Ga)Se_2$ thin film solar cells processing by physical vapor deposition 3-O-14 <u>J. Sastré-Hernández</u>¹, F.A. Zubieta-López¹, M. Tufiño-Velázquez¹, M.E. Calixto², G. Contreras-Puente¹, A. Morales-Acevedo³, M. L. Albor-Aguilera¹, G. Casados³, R. Mendoza-Pérez⁴ 1. <i>Escuela Superior de Física y Matemáticas-IPN, México</i> 2. <i>Instituto de Física-BUAP, México</i> 3. <i>CINVESTAV-IPN, México</i> 4. <i>Universidad Autónoma de la Ciudad de México, México</i>	Enhanced Solar Cell Efficiency with Alternative Nanotubes /Nanoparticles TiO_2 Films 4-O-13 (15:05-15:20) <u>Lunchao Xia</u>, Mingdeng Wei <i>Fuzhou University, China</i>

15:10-15:25	Sensitivity to material properties of p-type c-Si solar cells 1-O-15 <u>Gianluca Coletti</u> , Petra Manshanden <i>ECN Solar Energy, the Netherlands</i>	Sputtering and post-sulfurization for high quality $\text{Cu}_2\text{ZnSnS}_4$ thin film deposition 3-O-15 Arun Khalkar, Kwang-Soo Lim, Shashikant P. Patole, Seong-Man Yu, Ji-Beom Yoo <i>Sungkyunkwan University, Republic of Korea</i>	Durability of dye-sensitized solar cells with a zinc porphyrin with an electron-donating group 4-O-14 (15:20-15:35) <u>Shinya Moribe</u> ¹ , Naohiko Kato ¹ , Kazuo Higuchi ¹ , Shouichi Doi ² , Katsuyoshi Mizumoto ² , Tatsuo Toyoda ² 1. TOYOTA Central R&D Labs, Inc., Japan 2. AISIN SEIKI Co., Ltd., Japan
15:25-15:40	Performance of p-type crystalline silicon solar cells: Effect of the compensation level 1-O-16 <u>Chengquan Xiao</u> , Deren Yang, Xuegong Yu, Duanlin Que <i>Zhejiang University, China</i>	Low temperature atmospheric pressure PE-CVD deposited ZnO front electrodes for PV CIGS cells 3-O-16 <u>A. Illiberi</u> , F. Grob, P. Poodt, G.J.J. Winands, M. Simor, P.J. Bolt <i>Netherlands Organization for Applied Scientific Research (TNO), The Netherlands</i>	
15:40-16:00	Tea Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells
16:00-16:25	Progress in silicon solar cell technology and equipment 1-I-4 <u>Peter Fath</u> <i>Centrotherm Photovoltaics AG, Germany</i>	New concepts for high efficiency and low cost inline manufactured flexible CIGS solar cells 3-I-4 <u>F. Kessler</u> ¹ , R. Würz ¹ , S. Spiering ¹ , D. Bremaud ² , T. Netter ² , M. Ruth ² , R. Ziltener ² , M. Kaelin ² , M. Schwagereit ³ , G. Palaniswamy ³ , S. Efimenko ⁴ , C. Schlegel ⁴ , R. Wächter ⁵ , B. Dimmler ⁵ , A. N. Tiwari ⁶ , S. Buecheler ⁶ , A. Chirila ⁶ , F. Pianezzi ⁶ , P. Blösch ⁶ , P.J. Bolt ⁷ , A. Illiberi ⁷ , A. Hovestad ⁷ , F. Grob ⁷ , P. Zabierowski ⁸ , A. Urbaniak ⁸ , M. Igalson ⁸ 1. ZSW, Germany 2. FLISOM AG, Switzerland 3. TATA STEEL RD & T, The Netherlands	Materials and Process Development for Thin Film Silicon Solar Cells and Modules 2-I-1 <u>U. Rau</u> <i>Photovoltaik Forschungszentrum Juelich GmbH, Germany</i>

		4. PEMCO, Belgium 5. MANZ, Germany 6. EMPA, Switzerland 7. TNO, The Netherlands 8. Warsaw University of Technology, Poland	
16:25-16:40	High Efficiency Hetero Junction Solar Cell investigated with a-Si Thin layer properties 1-O-17 <u>Chikao Okamoto</u> , Junichi Nakamura, Hidenori Yashiki, Takeshi Hieda, Kyotaro Nakamura, Naoki Koide, Yoshitaka Yamamoto, Yusuke Fukuoka <i>SHARP Corporation, Japan</i>	Effects of various acids on properties of chemical-bath-deposited In(S,O,OH) films as buffer layers for Cu(In,Ga)Se₂ solar cells 3-O-17 <u>Chia-Hua Huang</u> , Yueh-Lin Jan <i>National Dong Hwa University, Taiwan</i>	Light management schemes for high efficiency tandem and triple junction thin film silicon solar cells 2-O-1 <u>Linus Löfgren</u> , Mathieu Boccard, Jan-Willem Schüttauf, Corsin Battaglia, Jordi Escarré, Laura Ding, Sylvain Nicolay, Grégory Bugnon, Mathieu Charrière, Loïc Garcia, Simon Hänni, Michael Stuckelberger, Maximilien Bonnet-Eymard, Fanny Meillaud, Matthieu Despeisse, Christophe Ballif <i>Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
16:40-16:55	Industrial implementation of efficiency improvements in n-type bifacial solar cells 1-O-18 <u>I.G. Romijn</u> ¹ , A.R. Burgers ¹ , L.J. Geerligs ¹ , C.J.J. Tool, A.J. Carr ¹ , A. Gutjahr ¹ , D.S. Saynova ¹ , B. Heurtault, J. Anker ¹ , M. Koppes ¹ , Lang Fang ² , Xiong Jingfeng ² , Li Gaofei ² , Liu Dawei ² , Wang Yingchao ² , Xu Zhuo ² , Wang Hongfang ² , Hu Zhiyan ² , P.R. Venema ³ , A.H.G. Vlooswijk ³ 1. <i>ECN Solar Energy, the Netherlands</i> 2. <i>Yingli Solar, China</i> 3. <i>Tempres Systems BV, The Netherlands</i>	4x4cm² CIGS thin film solar cells prepared by low-temperature deposition process 3-O-18 <u>Liu wei</u> , Li Zhiguo, He Jingjing, Li Zuliang, Cheng Long, Liu Yimign, Yi Zhang, Sun Yun <i>Nankai University, China</i>	Management of light-trapping effect for novel a-Si:H/μc-Si:H tandem solar cells using ZnO/etched white glass substrates 2-O-2 <u>Bancha Janthong</u> ¹ , Yuki Moriya ¹ , Aswin Hongshingthong ² , Porponth Sichanugrist ¹ , Makoto Konagai ¹ 1. <i>Tokyo Institute of Technology, Japan</i> 2. <i>NECTEC, NSTDA, Thailand</i>
16:55-17:10	Improved efficiency and cost of ownership for p-type MWT cell and module technology 1-O-19 <u>M. Spath</u> , I.J. Bennett, W. Eerenstein, E.J. Kossen,	Selenization Process of Electrodeposited Cu-In-Ga Metallic Precursors Using Plasma Activation Se Source 3-O-19	A novel glass thinning and texturing method for Si thin-film solar cells application 2-O-3 <u>Hongtao Cui</u> ¹ , Chaowei Xue ¹ , Wei Li ¹ , Oliver Kunz ² ,

	C.J.J. Tool <i>Energy research Centre of the Netherlands (ECN), The Netherlands</i>	ZHANG Chao, AO Jian-Ping, JIANG Tao, SUN Guo-Zhong, HE Qing, ZHOU Zhi-Qiang, SUN Yun <i>Nankai University, China</i>	Patrick Campbell ¹ , Martin Green ¹ <i>1. University of New South Wales, Australia</i> <i>2. Suntech R&D Australia, Australia</i>
17:10-17:25	Industrial implementation of metal assisted texture for multi-crystalline silicon solar cells 1-O-20 J. Cichoszewski ¹ , Reuter ¹ , V. Speer ² , G. Willers ² , H.J. Axmann ² , J.H. Werner ^{1,3} <i>1. steinbeis Center Photovoltaics, Germany</i> <i>2. sovello GmbH, Germany</i> <i>3. University of Stuttgart, Germany</i>	The study of electrodeposited mechanisms on the formation of CIS thin films 3-O-20 Yu-Ling Xiao, Ming-Jer Jeng <i>Chang Gung University, Taiwan</i>	Rear surface texturing of polycrystalline silicon thin-film solar cells on glass using plasma etching 2-O-4 Ying Huang, Sandipan Chakraborty, Per I. Widenborg, Armin G. Aberle <i>National University of Singapore, Singapore</i>
17:25-17:40	High sheet resistance emitter for improved efficiency by wet etching processes 1-O-21 M. Aoki ¹ , Y. Ohshita ¹ , T. Kojima ¹ , N. Kojima ¹ , A. Harada ² , T. Tachibana ² , A. Ogura ² , Y. Kawata ³ , H. Sato ³ , Y. Kumagai ³ <i>1. Toyota technological Institute, Japan</i> <i>2. Meiji University, Japan</i> <i>3. Y.A.C. Co., Ltd., Japan</i>	Effects of annealing atmosphere on the properties of Cu₂ZnSn(S,Se)₄ films and solar cells 3-O-21 Tomohiro Yoshihara ¹ , Naoki Suyama ¹ , Yiwen Zhang ^{1,2} , Yasuyoshi Kurokawa ¹ , Akira Yamada ¹ <i>1. Tokyo Institute of Technology, Japan</i> <i>2. Toppan Printing Co., Ltd., Japan</i>	Open circuit voltage improvement of a-Si solar cells using n-type nanostructured silicon thin films 2-O-5 Guofu Hou, Guijun Li, Xinhua Geng, Xiaodan Zhang, Changchun Wei, Jianjun Zhang, Ying Zhao <i>Nankai University, China</i>
17:40-17:55	Boron-doped microcrystalline silicon thin layers as emitters for solar cell fabricated by ECR-CVD 1-O-22 Y. H. Chu, T. H. Chang, C. C. Lee, J.Y. Chang <i>National Central University, Taiwan</i>	Earth-abundant Cu₂ZnSnS₄ absorber fabricated through an electrochemical route 3-O-22 Shigeru Ikeda, Yixin Lin, Wilman Septina, Akio Kyoraiseiki, Takashi Harada, Michio Matsumura <i>Osaka University, Japan</i>	Diagnostic methods for thin-film silicon solar modules 2-O-6 Zoltán Berenyi, Arvind Shah <i>Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
Wednesday, November 07, 2012			
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 6: PV System	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells

		Test & Demonstration Project of PV System in IEE, CAS 6-I-1 (8:00-8:25) <u>Honghua Xu</u> <i>Chinese Academy of Sciences, China</i>	
8:15-8:40	Laser-doped solar cells on Mono- and Multi-Crystalline silicon substrates 1-I-5 <u>WenjingWang¹</u> , <u>ChunlanZhou¹</u> , <u>TaoLi¹</u> , <u>SuZhou¹</u> , <u>Yang Song²</u> , <u>Ye Duan²</u> , <u>YingqiangLuo</u> , and <u>Youzhong Li²</u> <i>1. Chinese Academy of Sciences, China</i> <i>2. Chinalight Solar Co. Ltd., China</i>	VLS-PV intermittence and stationary storage 6-O-1 (8:25-8:40) <u>Aurélien Bertin</u> <i>Hélios Energie, Institut de Physique du Globe de Paris, France</i>	
8:40-8:55	19.2% efficient c-Si solar cells using ion implantation 1-O-23 <u>Jian Wu</u> , <u>Yumei Li</u> , <u>Xusheng Wang</u> , <u>Linjun Zhang</u> <i>Canadian Solar Inc., China</i>	Solar Resources Evaluation and Simulation Model 6-O-2 <u>Wang Sicheng</u> <i>Energy Research Institute, NDRC, China</i>	High efficiency a-Si single-junction and a-Si/microcrystalline-Si tandem solar cells with W-textured ZnO deposited on etched glass 2-I-2 (8:30-8:55) <u>M. Konagai</u> <i>Tokyo Institute of Technology, Japan</i>
8:55-9:10	Silicon paste: a screen-printable doping source for solar cells 1-O-24 <u>Yu Gao</u> , <u>Xiaodong Pi</u> , <u>Deren Yang</u> <i>Zhejiang University, China</i>	Annual energy production from the Photovoltaic array systems in AIST Kyushu Center 6-O-3 <u>Tetsuyuki Ishii</u> , <u>Kenji Otani</u> , <u>Atsushi Masuda</u> , <u>Yoshihiro Hishikawa</u> <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i>	Advanced light trapping techniques in thin-film silicon solar cells: Role of Modelling 2-O-7 <u>Miro Zeman</u> , <u>Klaus Jäger</u> , <u>Serge Solntsev</u> , <u>Olindo Isabella</u> <i>Delft University of Technology, Netherlands</i>
9:10-9:25	High-efficiency p- and n- type silicon heterojunction solar cells 1-O-25 <u>Stefaan De Wolf</u> , <u>Loris Barraud</u> , <u>Antoine Descoeur</u> , <u>Zachary Holman</u> , <u>Christophe Ballif</u> <i>Ecole Polytechnique Fédérale de Lausanne (EPFL),</i>	PV system market in Japan - new Feed-in Tariff program and its impacts on the market 6-O-4 <u>Izumi KAIZUKA</u> , <u>Hiroshi MATSUKAWA</u> , <u>Takashi OHIGASHI</u> , <u>Haruki YAMAYA</u> <i>RTS Corporation, Japan</i>	Plasmonic Au-nanoparticle-doped TiO₂ thin-film layers on silicon for anti-reflection- and photocurrent-enhancement 2-O-8 <u>Jan Amaru Töflinger¹</u> , <u>Caspar Leendertz¹</u> , <u>Orman Gref¹</u> , <u>Maurizio Roczen¹</u> , <u>Lars Korte¹</u> , <u>Bernd Rech¹</u>

	Switzerland		Esteban Pedrueza², Raúl García-Calzada², Vladimir Chirvony², Rafael Abargues², José L. Valdés², Juan P. Martínez-Pastor² 1. Helmholtz-Zentrum Berlin, Germany 2. Universidad de Valencia, Spain
9:25-9:40	Impurity photovoltaic effect in Ti-doped crystalline Si solar cell 1-O-26 Quan Cao, Tianwei Zhou, Jun Zheng, <u>Yuhua Zuo</u>, Qiming Wang <i>Chinese Academy of Sciences, China</i>	Effective annual solar spectral distribution for PV modules at multiple geographic locations 6-O-5 <u>Jun Hashimoto</u>¹, Tetsuyuki Ishii¹, Yanqun Xue¹, Takumi Takashima¹, Kenji Otani¹, Akihiko Itagaki², Kenji Utsunomiya² 1. National Institute of Advanced Industrial science and Technology, Japan 2. Japan Weather Associations, Japan	Transfer-printed Ag nanostructures for light trapping in thin-film Si solar cells 2-O-9 <u>Hidenori Mizuno</u>, Hitoshi Sai, Koji Matsubara, Michio Kondo <i>National Institute of Advanced Industrial Science and Technology, Japan</i>
9:40-9:55	Study on stability of SiN_x/a-Si stacked passivation layer realizing extremely low surface recombination velocity 1-O-27 <u>Taiki Goto</u>, Koichi Koyama, Keisuke Ohdaira, Hideki Matsumura <i>Japan Advanced Institute of Science and Technology, Japan</i>	Effect of earthquake on the photovoltaic systems 6-O-6 <u>Der-Ray Huang</u>¹, Yi-Wei Chen¹, Huan-Sheng Zeng¹, Jian-Lin Qiu¹, Chia-Cheng Chou¹ and Teng-Chun Wu² 1. National Dong Hwa University, Taiwan 2. Industrial Technology Research Institute, Taiwan	Optimization of open circuit voltage for amorphous silicon solar cells at low temperatures by incorporation of p-type silicon carbide window layers 2-O-10 <u>Jian Ni</u>, Jun Ma, Jianjun Zhang, Zhenhua Huang, Xinliang Chen, Xiaodan Zhang, Xinhua Geng, Ying Zhao <i>Nankai University, China</i>
9:55-10:10	Front side degradation of silicon solar cells by rear side laser processing 1-O-28 <u>Felix Haase</u>¹, Udo Römer¹, Tobias Neubert¹, Jan Hendrik Petermann¹, Robby Peibst¹, Nils-Peter Harder¹, Sarah Kajari-Schröder¹, Rolf Brendel^{1,2} 1. Institute for Solar Energy Research Hamelin (ISFH), Germany 2. Leibniz Universität Hannover, Germany	Hysteresis Current Control Technique for Grid-Connected PV Systems Using Space Vector Modulation Method 6-O-7 <u>SHU Jie</u>¹, LIAO Zhi-Fan¹, YAO Shao-Xiong² 1. Chinese Academy of Sciences, China 2. Emerson Network Power Co. Ltd., China	High efficiency a-Si:H Single-Junction solar cells achieved by employing $\mu\text{c-SiO}_x\text{H}$ as n-type layer or back TCO replacement 2-O-11 <u>Y.P. Lin</u>, Y.W. Tseng, S.W. Liang, C.H. Hsu, C.C. Tsai <i>National Chiao Tung University, Taiwan</i>
10:10-10:30	Tea Break		

	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 6: PV System	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells
10:30-10:55	Switch from p- to n-type silicon solar cell technology? N-type solar cells and process technologies for the future 1-I-6 <u>Radovan Kopecek</u> , Joris Libal <i>International Solar Energy Research Center Konstanz e.V., Germany</i>	Technology and Engineering of PV-microgrid in China 6-I-2 <u>Yibo Wang</u> <i>Chinese Academy of Sciences, China</i>	Efficiency improvement of micromorph tandem silicon solar cells implementing high-rate microcrystalline silicon and innovative front electrode 2-I-3 <u>Xiaodan Zhang</u> ¹ , SuSu Yang ¹ , Lisha Bai ¹ , Bofei Liu ¹ , Jian Ni ¹ , Jun Fan ^{1,2} , Xu Yang ¹ , Huixu Zhao ¹ , Qian Huang ¹ , Changchun wei ¹ , Xinliang Chen ¹ , Guangcai Wang ¹ , Guofu Hou ¹ , Ying Zhao ¹ <i>1. Nankai University, China</i> <i>2. Hebei University of Technology, China</i>
10:55-11:10	Performance degradation and surface deterioration of multicrystalline silicon solar cell in shipping process 1-O-29 Teng-Chun Wu ¹ , <u>Chia-Cheng Chou</u> ² , Shu-Tsung Hsu ¹ , Yean-San Long ¹ , Hung-Sen Wu ¹ Der-Ray Huang ² <i>1. Industrial Technology Research Institute, Taiwan</i> <i>2. National Dong Hwa University, Taiwan</i>	Solar spectrum prediction based on ground-based atmospheric measurements 6-O-8 <u>Yanqun Xue</u> , Jun Hashimoto, Kenji Otani <i>National Institute of Advanced Industrial Science and Technology, Japan</i>	Compatibility of glass textures with E-beam evaporated silicon thin-film solar cells 2-O-12 <u>Hongtao Cui</u> ¹ , Kazuo Omaki ¹ , Oliver Kunz ² , Patrick Campbell ¹ , Martin Green ¹ <i>1. University of New South Wales, Australia</i> <i>2. Suntech R&D Australia, Australia</i>
11:10-11:25	Excellent c-Si surface passivation by industrial firing activation of thermal atomic layer deposited Al₂O₃ 1-O-30 <u>Baochen Liao</u> ^{1,2} , Rolf Stangl ¹ , Thomas Mueller ¹ , Fen Lin ¹ , Zixuan Qiu ¹ , Aaron J. Danner ² , Hyunsoo Yang ² , Armin G. Aberle ^{1,2} , Charanjit S. Bhatia ^{1,2} , Bram Hoex ¹ <i>1. Solar Energy Research Institute of Singapore</i>	The Generation Performance Comparison of Solar Cells 6-O-9 <u>Yunlin Sun</u> ^{1,2} , Kaihan Chen ¹ , Ruijiang Hong ¹ , Hui Shen ¹ <i>1. Sun Yat-sen University, China</i> <i>2. Shunde Sun Yat-sen University Institute for Solar, China</i>	Low-defect polycrystalline silicon solar cells on glass formed by diode laser crystallization 2-O-13 <u>Jialiang Huang</u> ¹ , Jonathon Dore ^{1,2} , Bonne Eggleston ^{1,2} , Rhett Evans ² , Mark Keevers ¹ , Renate Egan ² , Sergey Varlamov ¹ , Martin A. Green ¹ <i>1. University of New South Wales, Australia</i> <i>2. Suntech R&D Australia Pty Ltd, Australia</i>

	(SERIS), National University of Singapore (NUS), Singapore 2. National University of Singapore, Singapore		
11:25-11:40	Surface passivation mechanism of O₃-based atomic layer deposited AlO_x films on crystalline silicon 1-O-31 <u>Hyunju Lee</u>^{1,4}, Tomihisa Tachibana^{1,4}, Norihiro Ikeno^{1,4}, Hiroki Hashiguchi^{1,4}, Koji Arafune^{2,4}, Haruhiko Yoshida^{2,4}, Shin-ichi Satoh^{2,4}, Toyohiro Chikyow³, Atsushi Ogura^{1,4} 1. Meiji University, Japan 2. University of Hyogo, Japan 3. National Institute for Materials Science, Japan 4. JST-CREST, Japan	PV Rooftop in Thailand: Lessons Learned and solutions 6-O-10 <u>Setawish Areesakulkij</u>, Dhirayut Chenvidhya, Krissanapong Kirtikara, Chaya Jivacate <i>King Mongkut's University of Technology Thonburi, Thailand</i>	Ultrathin p-type microcrystalline silicon used as interface layer between TCO and p-a-SiC in p-i-n amorphous silicon solar cells deposited on different TCO 2-O-14 <u>Li Wang</u>, Xiaodan Zhang, Xu Yang, Yanfeng Wang, Qian Huang, Changchun Wei, Jian Sun, Dekun Zhang, Xinliang Chen, Ying Zhao <i>Nankai university, China</i>
11:40-11:55	Hydrogen de-activation of boron for silicon solar cells 1-O-32 <u>P. Hamer</u>, S.R. Wenham, E. Mitchell <i>The University of New South Wales, Australia</i>	Indian Solar Initiative: Present Status & Way Forward 6-O-11 <u>Bharat Bhargava</u> <i>New Delhi, India</i>	The influence of thickness on continuity of polycrystalline silicon thin film for aluminum-induced crystallization 2-O-15 <u>Tao Wang</u>^{1,2}, Xin Song¹, Qingtao Pan¹, Meiyan Geng¹, Zengxin Hu¹, Hui Wang¹, Tao Liu, Haijun Jia¹, Yaohua Mai¹, Ming Zhang², Hui Yan² 1. Baoding Tianwei Solar films Co., Ltd, China 2. Beijing University of Technology, China
11:55-12:10	Screen-printing boron diffusion source to form high quality p+ layers for n-type silicon solar cells 1-O-33 <u>Abdullah Uzum</u>¹, Shuhei Yoshida¹, Marwan Dhamrin¹, Koichi Kamisako¹, Yoshiyuki Suda¹, Hiroaki Sato², Katsuhiko Katsuma², Kuniyasu Kato² 1. Tokyo University of Agriculture and Technology, Japan 2. The Nippon Synthetic Chemical Industry Co.,	Experimental investigation of the STPV system 6-O-12 <u>Chenxue</u>¹, Xuan yimin², Zhang mengyan¹ 1. Shanghai space power institute, China 2. Nanjing University of aeronautics and astronautics, China	Structure and photoelectrical properties of amorphous silicon doped with titanium 2-O-16 <u>Tianwei Zhou</u>, quan Cao, yuhua Zuo, qiming Wang <i>Chinese Academy of Sciences, China</i>

	<i>Ltd. (NIPPON GOHSEI), Japan</i>		
12:10-13:30	Lunch Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells
13:30-13:55	TBD 4-I-5 <u>Saif Haque</u> <i>University Colledge London, UK</i>	Large internal quantum efficiency exceeding 70% in semiconducting BaSi₂ for thin-film solar cell applications 3-I-7 <u>Weijie Du</u> , M. Baba ¹ , K. Nakamura ¹ , M. A. Khan ¹ , K. Toko ¹ , N. Usami ^{2,3} and T. Suemasu ^{1,3} <i>1. Univ. of Tsukuba, Japan</i> <i>2. Tohoku Univ., Japan</i> <i>3. JST-CREST, Japan</i>	High deposition rate of high efficiency micromorph devices 2-I-4 <u>Gaetano Parascandolo</u> <i>Institute of Microengineering, PVlab, Switzerland</i>
13:55-14:10	Design of TiO₂ electrode surface with organic silane monomolecular layer for high performance DSCs 4-O-15 <u>Qi Feng</u> , Zhouqi Tao, Changdong Chen, Yong Fan, Shunsuke Nakanishi <i>Kagawa University, Japan</i>	Effects of post-annealing process for CdS buffer layer in Cu₂ZnSnS₄ solar cells 3-O-23 <u>Masaki Hasegawa</u> , Shin Tajima, Tadayoshi Ito, Tatsuo Fukano <i>Toyota Central R&D Labs. Inc., Japan</i>	Microcrystalline silicon solar cell and its application in micromorph solar cells 2-O-17 <u>Lisha Bai</u> , Xiaodan Zhang, Bofei Liu, Jian Ni, Xu Yang, Huixu Zhao, Changchui Wei, Jian Sun, Ying Zhao <i>Nankai University, China</i>
14:10-14:25	Toward High Efficiency Polymer Solar Cell 4-O-16 <u>Chun-Chih Ho</u> , Hsueh-Chung Liao, Jhin-Fong Lin, Wei-Fang Su <i>National Taiwan University, Taiwan</i>	Cu doping of CdTe layer in polycrystalline CdTe thin-film solar cells 3-O-24 <u>Tamotsu Okamoto</u> , Ryoji Hayashi, Shigeki Hara, Yohei Ogawa, Yusuke Saka, Keita Takahashi <i>Kisarazu National College of Technology, Japan</i>	Progress in silicon heterojunction solar cells: keys to high cell open circuit voltages 2-O-18 <u>Hsueh-ChuanLee</u> , Chun-Yu Shih, Lu-Sheng Hong <i>National Taiwan University of Science and Technology, Taiwan</i>
14:25-14:40	Effects of surface modification on photovoltaic property and carrier dynamics for quantum dot sensitized solar cells 4-O-17 <u>Qing Shen</u> ^{1,2} , Sojiro Hachiya ¹ , Iván Mora-Seró ³ , Juan Bisquert ³ , Kenji Katayama ⁴ , Taro Toyoda ¹	CdTe thin-film solar cell with the conversion efficiency of 12.78% grown by RF magnetron sputtering 3-O-25 <u>Hui Li</u> , Xiangxin Liu, Fang Huang <i>Chinese Academy of Sciences, China</i>	A-SiGe:H solar cell and preliminary application in triple-junction solar cells 2-O-19 <u>Bofei Liu</u> , Lisha Bai, Jian Ni, Qian Hang, Xu Yang, Huixu Zhao, Changchui wei, Jian sun, Ying Zhao, Xiaodan Zhang

	1. <i>The University of Electro-Communications, Japan</i> 2. <i>Japan Science and Technology Agency (JST), Japan</i> 3. <i>Universitat Jaume I, Spain</i> 4. <i>Chuo University, Japan</i>		<i>Nankai University, China</i>
14:40-14:55	Electrical properties of I₂-II-IV-VI₄ single crystal 4-O-18 <u>Akira Nagaoka</u>¹, Kenji Yoshino¹, Hideto Miyake² 1. <i>University of Miyazaki, Japan</i> 2. <i>Mie University, Japan</i>	Influence of Temperature Cycling on the Performances of CdTe Solar Cells 3-O-26 <u>Zeng Guanggen</u>, Wang Wenwu, Feng Langhuan, Zhang Jingquan, Li Bing, Wu Lili, Li Wei, Cai Yaping <i>Sichuan University, China</i>	Plasmonic effect of nanoparticles on silicon safer solar cells with reduced thickness 2-O-20 <u>Nicholas Stokes</u>, Baohua Jia, Min Gu <i>Swinburne University of Technology, Australia</i>
14:55-15:10	Enhancement on light absorption of dye and Si quantum dot co-sensitized solar cells 4-O-19 <u>Hyunwoong Seo</u>, Yuting Wang, Ichida Daiki, Giichiro Uchida, Kunihiro Kamataki, Naho Itagaki, Kazunori Koga, Masaharu Shiratani <i>Kyushu University, Japan</i>	Drastic QE enhancement by light-trapping structure in InGaAs/GaAsP Multiple Quantum-Well solar cells 3-O-27 <u>Boram Kim</u>, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano <i>The University of Tokyo, Japan</i>	Texture etched ZnO: Al films for high-efficiency silicon thin film solar cells 2-O-21 <u>Qian Huang</u>, Yang Liu, Lisha Bai, Ying Zhao, Xiaodan Zhang <i>Nankai university, China</i>
15:10-15:25	Interface Engineering in Nanostructured Solar Cells 4-O-20 <u>Guoping Xu</u>, Guodong Liu, Shulin Ji, Changhui Ye <i>Chinese Academy of Sciences, China</i>	Dependence of crystallinity of InGaN thin films grown on sapphire substrates having In₂O₃ underlayers on their compositions 3-O-28 <u>Yuichi Sato</u>, Kazuki Ito, Masato Iwaki, Tatsuya Matsunaga, Yuhei Muraki, Hiroki Takemoto, Kosuke Funaki <i>Akita University, Japan</i>	Optical properties and growth rates of silicon films deposited from free jet activated by electron beam 2-O-22 <u>Eugene Baranov</u>, Alexander Zamchiy, Sergey Khmel <i>Russian Academy of Sciences, Russia</i>
15:25-16:00	Tea Break		
16:00-18:00	Poster Session		
18:30-20:30	Conference Banquet		

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	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 5: Components of PV System
8:00-8:25			Power Control Strategies for Microgrid with Photovoltaic Generators 5-I-1 <u>Mao Meiqin</u> , Su Jianhui <i>Hefei University of Technology, China</i>
8:25-8:40	Passivation properties of a-Si/SiN_x stack layers for crystalline silicon 1-O-34 <u>Xue Zheng</u> , Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>	Study on the cause of the Cu_{2-δ}Se formation in Cu(In, Ga) Se₂ thin films by Raman Spectroscopy 3-I-5 (8:15-8:40) <u>Y. Takabayashi</u> ¹ , T. Shimizu ¹ , T. Sakurai ¹ , A. Yamada ² , S. Ishizuka ² , S. Niki ² , K. Akimoto ¹ <i>1. University of Tsukuba, Japan</i> <i>2. National Institute of Advanced Industrial Science and Technology (AIST), Japan</i>	Effect of environmental factors on current-voltage characteristics of sun tracking crystalline Si photovoltaic module 5-O-1 <u>Seiya Ueno</u> ¹ , Yasuyuki Ota ² , Shota Yoshida ¹ , Kensuke Nishioka ² , Takashi Minemoto ¹ <i>1. Ritsumeikan University, Japan</i> <i>2. University of Miyazaki, Japan</i>
8:40-8:55	Low cost spin-coating passivation films for crystalline silicon solar cell applications 1-O-35 <u>Shuhei Yoshida</u> ¹ , Katsuya Tanitsu ² , Abdullah Uzum ¹ , Damrin Marwan ¹ , Koichi Kamisako ¹ <i>1. Tokyo University of Agriculture and Technology, Tokyo, Japan</i> <i>2. TOKYO OHKA KOGYO CO., LTD., Japan</i>	Study of physical properties of CIGS absorber layers grown by one-step sputtering process using CIGS single target 3-O-29 Jae-Cheol Park, Jeon-Ryang Lee, Seung-Hyun Lee, Bo-Ra Koo, <u>Tae-Won Kim</u> <i>Korea Institute of Technology, Republic of Korea</i>	Estimation of output energy of photovoltaic module using contour map with limited range of solar spectrum 5-O-2 <u>Naoya Kataoka</u> , Shota Yoshida, Seiya Ueno, Hideyuki Takakura, Takashi Minemoto <i>Ritsumeikan University, Japan</i>
8:55-9:10	Novel field-effect passivation material for thinner crystalline silicon solar cells: strontium silicate 1-O-36 <u>Yasushi Hotta</u> ^{1,3} , Atsuhiko Imanaka ¹ , Shota	Fabrication and properties of CZTS epitaxially grown on silicon substrate 3-O-30 <u>Xiaoqing Hao</u> , Ning Song, Xiaolei Liu, Shujuan Huang, Martin A Green	System yield analysis of crystalline Si PV modules with manufacturers' flash test results 5-O-3 <u>Yuzuru Ueda</u> ¹ , Kosuke Kurokawa ¹ , Mitsuru Kudo ² , Hiroo Konishi ²

	Taniwaki¹, Yuki Toyoshima¹, Tsubasa Sasaki¹, Haruhiko Yoshida^{1,3}, Koji Arafune^{1,3}, Atsushi Ogura^{2,3}, and Shin-ichi Satoh^{1,3} 1. University of Hyogo, Japan 2. Meiji University, Japan 3. JST-CREST, Japan	University of New South Wales, Australia	1. Tokyo Institute of Technology, Japan 2. NTT FACILITIES, INC., Japan
9:10-9:25	Thin (<100 μm) crystalline silicon solar cell fabrication 1-O-37 <u>Y. Ohshita</u>¹, M. Aoki¹, T. Kojima¹, N. Kojima¹, T. Tachibana², and A. Ogura² 1. Toyota Technological Institute, Japan 2. Meiji University, Japan	Application of photoluminescence for process optimization toward 10% efficiency Cu₂ZnSnS₄ submodules 3-O-31 <u>Christopher Liao</u>, Takuya Katou, Homare Hiroi, Noriyuki Sakai, Satoshi Muraoka, Hiroki Sugimoto Solar Frontier K.K., Japan	A study on spatial average insolation forecast in electric utility service area 5-O-4 <u>Yuki Kataoka</u>, Takeyoshi Kato, Yasuo Suzuoki Nagoya University, Japan
9:25-9:40	Thermal degradation and thermal engineering of crystalline silicon for solar cells 1-O-38 <u>Panbing Zhou</u>, Lang Zhou Nanchang University, China	Studies on the effects of soft-annealing conditions on the properties of the Cu₂ZnSnS₄ (CZTS) thin films by sulfurization of Cu-Zn-Sn metallic precursor 3-O-32 <u>Min SungKim</u>¹, SeungWookShin², Jae Ho Yun², Jong-HaMoon¹, Jeong Yong Lee², JinHyeokKim¹ 1. Chonnam National University, Republic of Korea 2. KAIST, Republic of Korea	Evaluation and Verification test results in Hokuto Large-scale PV Generation System 5-O-5 <u>Hiroo Konishi</u>, Takeshi Iwato, Mitsuru Kudou NTT Facilities Inc., Japan
9:40-9:55	Crystalline silicon surface passivation with industrial plasma silicon nitride and aluminium oxide 1-O-39 <u>Shubham Duttgupta</u>^{1,2}, Ziv Hameiri¹, Bram Hoex¹, Armin G. Aberle^{1,2} 1. Solar Energy Research Institute of Singapore, Singapore 2. National University of Singapore, Singapore	Fabrication of Cu₂ZnSn(S,Se)₄ films by printing and high-pressure sintering 3-O-33 <u>Feng Gao</u>, Tsuyoshi Maeda, Takahiro Wada Ryukoku University, Japan	Standards and Codes on Photovoltaic Testing in Thailand 5-O-6 <u>Tanokkorn Chenvidhya</u>, Chamnan Limsakul, Ballang Muenpinij, Yaowanee Sangpongsanont, Manit Seapan, Dhirayut Chenvidhya King Mongkut's University of Technology Thonburi, Thailand
9:55-10:10	Progress with industrially feasible passivation of	Analys characterization and of Cu₂ZnSnS₄ thin films grown by pulsed laser deposition	A regional Photovoltaic power forecasting

	lightly and heavily doped n-type silicon surfaces using inline PECVD silicon nitride 1-O-40 Shubham Duttagupta, Bram Hoex, Armin G. Aberle <i>National University of Singapore, Singapore</i>	3-O-34 Ting-Wei Kuo , Tung-Tung Chen , Ching-Hsiang Chiu , Chen Yao Ju , Horng-Show Koo , Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>	method by using meteorological data of Japanese observation stations 5-O-7 Takashi OOZEKI¹, Joao Gari da Silva FONSECA Junior¹, Hideaki OHTAKE¹, Kenichi SHIMOSE¹, Takumi TAKASHIMA¹, Kazuhiko OGIMOTO² 1. National Institute of Advanced Industrial Science and Technology, Japan 2. The University of Tokyo, Japan
10:10-10:30	Tea Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 5: Components of PV System
10:30-10:55	Si nano-pillar arrays and surface passivation for radial junction solar cells application 1-O-41 (10:30-10:45) Gangqiang Dong, Fengzhen Liu, Meifang Zhu <i>Chinese Academy of Sciences, China</i>	In situ x-ray analysis of a low-temperature Cu(In,Ga)Se₂ co-evaporation process on flexible polyimide foil 3-I-6 D. Greiner¹, C. A. Kaufmann¹, R. Mainz¹, H. Rodriguez-Alvarez¹, A. Weber¹, M.-D. Heinemann¹, J. Lauche¹, S. Brunner², K. Zajac², M. Klaus¹, C. Genzel¹, H.-W. Schock¹ 1. Elmholtz-Zentrum Berlin für Materialien und Energie, Germany 2. Hoch Technologie Systeme GmbH, Germany	Building Blocks of PV DG Inverters in Smart Grid Environment 5-I-2 Riming Shao, Mary Kaye, Chris Diduch, Abdualah Aljankawey, Liuchen Chang <i>University of New Brunswick, Canada</i>
10:55-11:10	The impact of deposition temperature on the passivation quality of industrial plasma deposited AlO_x/SiN_x and AlO_x/SiO_x stacks 1-O-42 (10:45-11:00) Ziv Hameiri, Shubham Duttagupta, Armin G. Aberle, Bram Hoex <i>Solar Energy Research Institute of Singapore (SERIS), National University of Singapore (NUS),</i>	Preparation of Cu₂ZnSnSe₄ thin films by rapid thermal selenization 3-O-35 Yun-Feng Chen, Cian-Huei Gao, Jhen-Yi Li, Bae-Heng Tseng <i>National Sun Yat-Sen University, Taiwan</i>	Experimental Studies of Signal Response in PV Strings for Fault Diagnosis 5-O-8 Takumi TAKASHIMA <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i>

	<i>Singapore</i>		
11:10-11:25	RF magnetron sputtering aluminum oxide film for surface passivation on crystalline silicon 1-O-43 (11:00-11:15) <u>Siming Chen</u> , Luping Tao, Libing Zeng, Ruijiang Hong <i>Sun Yat-Sen University, China</i>	Effects of sulfurization temperature on properties of CZTS thin films by vacuum evaporation and sulfurization method 3-O-36 <u>Jie Zhang</u> , Weibo Zhang, Shuying Cheng, Yunfeng Lai, Haifang Zhou <i>Fuzhou University, China</i>	Evaluating of solar radiation exposures for field test of photovoltaic systems in eastern Taiwan 5-O-9 <u>Der-Ray Huang</u> , Yi-Wei Chen, Huan-Sheng Zeng <i>National Dong Hwa University, Taiwan</i>
11:25-11:40	18.0% efficiency multi-crystalline Si metal wrap through (MWT) solar cells 1-O-44 (11:15-11:30) <u>Angie Zhang</u> , Weiwei Yin, Weixu Long, Xusheng Wang, Lingjun Zhang <i>Canadian Solar Inc., China</i>	Chemical bonds in CuInSe_2, $\text{Cu}_2\text{ZnSnS}_4$ and other solar cells compounds 3-O-37 <u>Tsuyoshi Maeda</u> , S. Nakamura, Takahiro Wada <i>Ryukoku University, Japan</i>	A Design of PV Gigafloat Project 5-O-10 <u>Hiroshi Kubo</u> <i>Chiba Institute of Technology, Japan</i>
11:40-11:55	The effects of back contact pattern designs for high efficiency silicon hetero-junction back contact solar cells 1-O-45 (11:30-11:45) <u>Jong-Chul Lee</u> , Sang-Kyun Kim, Hun Park, Sung-Hun Cho, Ji-Eun Lee, Jin-Ho Choi, Ki-Hyun Kim and Won-Jae Lee <i>Hyundai Heavy Industries, Co., Ltd., Republic of Korea</i>	Growth of High Quality $\text{Zn}_x\text{Cd}_{1-x}\text{S}$ Thin Film Window Layers by RF Magnetron Sputtering 3-O-38 <u>S. Hossain</u> , A. Islam, Q. Huda, M. Aliyu, T. Razykov, K. Sopian, N. Amin <i>Universiti Kebangsaan Malaysia, Malaysia</i>	Effects of light non-uniformity on the calibration of photovoltaic devices 5-O-11 D. Etienne ¹ , C. Monokroussos ¹ , C. Dreier ¹ , U. Therhaag ¹ and W. Herrmann ² 1. TÜV Rheinland (Shanghai) Co., Ltd., China 2. TÜV Rheinland Energie und Umwelt GmbH, Germany
11:55-12:10	Over 22.5% efficiency silver-free heterojunction silicon solar cells 1-O-46 (11:45-12:00) <u>Daisuke Adachi</u> ¹ , José Luis Hernández ² , Dries Schroos ² , Andrea Feltrin ² , Nicolas Menou ² , Nick Valckx ² , Elisabeth Van Assche ² , Kunta Yoshikawa ^{1,2} , Masashi Hino ¹ , Masanori Kanematsu ¹ , Toshihiko Uto ¹ , Hisashi Uzu ¹ , Hayato Kawasaki ¹ , Tomomi Meguro ¹ , Christophe Allebé ¹ , Takashi Kuchiyama ¹ , Toru Terashita ¹ , Masafumi	Strategies in Efficiency Enhancement for CdS-Sensitized Nanostructured Solar Cells 3-O-39 <u>Guoping Xu</u> , Guodong Liu, Shulin Ji, Chunhui Miao, Changhui Ye <i>Chinese Academy of Sciences, China</i>	Electrical parameters measurement of Si PV at non-STC of LED solar simulators 5-O-12 <u>Anon Namin</u> ¹ , Jutturit Thongpron ¹ , Dhirayut Chenvidhya ² , Chaya Jivacate ² , Krissanapong Kirtikara ² 1. Rajamangala University of Technology Lanna, Thailand 2. King Mongkut's University of Technology Thonburi, Thailand

	Hiraishi ¹ , Naoaki Nakanishi ¹ , Masashi Yoshimi ¹ , Kenji Yamamoto ^{1,2} 1. KANEKA corporation, Japan 2. KANEKA Belgium N.V., Belgium		
12:10-13:30	Lunch Break		
	ROOM 1	ROOM 2	ROOM 3
	AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
13:30-13:55	4-8% power output increase with a new module assembly technology 1-I-7 <u>Ton Schless</u> <i>SIBCO China / Kunshan SIBCO Electronic Technology Co., Ltd., China</i>	Development of High Efficient Si Thin Film Solar Module Based on Triple Junction Cell Technology 2-I-5 <u>Heon-Min Lee</u> <i>LGE Advanced Research Institute, Republic of Korea</i>	The effects of wire length, diameter and c-Si (core)/SiO₂ (shell) coaxial structure on antireflection properties of ordered silicon nanowire arrays 4-O-21 (13:30-13:45) <u>Lingsheng Zeng</u> , Dong Wang, Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>
13:55-14:10	Hot carrier solar cell absorbers 1-O-47 <u>Gavin Conibeer</u> , Santosh Shrestha, Shujuan Huang, Robert Patterson, Pasquale Aliberti, Hongze Xia, Yu Feng, Neeti Gupta, Suntrana Smyth, Yuanxun Liao <i>University of New South Wales, Australia,</i>	Development of a-Si:H/uc-Si:H/uc-Si:H triple-junction thin-film solar cells 2-O-23 <u>Shunsuke Kasashima</u> , Yuki Moriya, Bancha Janthong, Sinae Kim, Porponth Sichanugrist, Makoto Konagai <i>Tokyo Institute of Technology, Japan</i>	Further efficiency improvements of the n-type MWT Si solar cells using industrial processes 4-O-22 (13:45-14:00) <u>N. Guillemin</u> ¹ , B.J.B. Heurtault ¹ , L.J. Geerligs ¹ , B.B Van Aken ¹ , I.J. Bennett ¹ , M.J. Jansen ¹ , L. Berkeveld ¹ , A.W. Weeber ¹ , J.H. Bultman ¹ , Zhao wenchao ² , Wang jianming ² , Wang ziqian ² , Chen yingle ² , Shen yanlong ² , Hu zhiyan ² , Li gaofei ² , Chen jianhui ² , Yu bo ² , Tian shuquan ² , Xiong jingfeng ² 1. ECN Solar Energy, the Netherlands 2. Yingli Green Energy Holding Co., Ltd. China
14:10-14:25	Study of O₃-based atomic layer deposited AlO_x passivation films for crystalline silicon solar cells 1-O-48 <u>Koji Arafune</u> ^{1,4} , Shunsuke Yamamoto ^{1,4} , Ko	Characterization of surface passivation on silicon nanowire solar cells 2-O-24 <u>Ping Yang</u> , Xiangbo Zeng, Xiaobin Xie, Hao Li,	Optical Absorption Enhancement in Submicron Silicon Films with Nanotexturing Arrays for Solar Photovoltaic Applications 4-O-23 (14:00-14:15)

	Urushibata^{1,4}, Shohei Miki^{1,4}, Haruhiko Yoshida^{1,4}, Atsushi Ogura^{2,4}, Yoshio Ohshita^{3,4}, Shin-ichi Satoh^{1,4} 1. University of Hyogo, Japan 2. Meiji University, Japan 3. Toyota Technological Institute, Japan 4. JST-CREST, Japan	Jingyan Li, Zhanguo Wang <i>Chinese Academy of Sciences, China</i>	Wei Wang, Jiasen Zhang, Yu Zhang and Guogang Qin <i>Peking University, China</i>
14:25-14:40	Feasibility study of a new module concept: BUSBARLESS (BBL) cells and modules 1-O-49 <u>Kengo Nakano</u>, Liyuan Sun, Junyong Li, Taofen Yang, Jun Liu, Xiaoyan Zhong, Jiabin Du and Yuepeng Wan <i>LDK solar Co., Ltd, China</i>	Amorphous silicon / amorphous silicon germanium tandem solar cells on thin flexible substrates 2-O-25 <u>Cheng Liu</u>, Zhengjun Xu, Junkun Yang <i>Shanghai Institute of Space Power Sources, China</i>	Enhancement of Electron Transfer Efficiency in Solar Cells Based on PbS QDs /N719 Dye Co-Sensitizers 4-O-24 (14:15-14:30) <u>Yanyan Gao</u>¹, Xiaoping Zou¹, Zhe Sun¹, Zongbo Huang¹, Xiaofeng Wu² 1. Beijing Information Science and Technology University, China 2. Chinese Academy of Sciences, China
14:40-14:55	A uniform porous antireflection layer created on the low iron glass by corrosion method 1-O-50 <u>Chen Xu</u>, Lei Wang, Shijun Zhang, Dan Li, Deren Yang <i>Zhejiang University, China</i>	Incorporation of high quality p-type microcrystalline silicon carbide window layers in n-i-p type amorphous silicon solar cells 2-O-26 <u>Jun Ma</u>, Jian Ni, JianJun Zhang, Yu Cao, Tianwei Li, YanHui Zhang, Xinliang Chen, XiaoDan Zhang, Xinhua Geng, Ying Zhao <i>Nankai University, China</i>	Deposition of monocrystalline silicon thin films applying for solar cells by atmospheric plasma enhanced chemical vapor deposition 4-O-25 (14:30-14:45) <u>Cheolhyun Lim</u>, Sukho Lee <i>Southwestern research institute of green energy technology, Republic of Korea</i>
14:55-15:10	Failure analysis methods for back contact cell modules 1-O-51 <u>Bona He</u>¹, Yong Shen¹, Dong Hou¹, Sonya Xu¹, William R Bottenberg² 1. Solar Technology Center, Applied Materials. Inc, China 2. Applied Materials Inc., USA	Transfer of amorphous silicon films on mid-air structure to porous silicon and epitaxial growth induced by near-infrared semiconductor diode laser irradiation 2-O-27 <u>S. Nakamura</u>, K. Sakaike, Y. Kobayashi, S. Hayashi, and S. Higashi <i>Hiroshima University, Japan</i>	Development of novel structure a-SiO_x:H/a-Si_{1-x}Ge_x:H tandem cell for high-efficiency thin-film solar cell applications 4-O-26 (14:45-15:00) <u>Y.W. Tseng</u>, Y.H. Lin, H.J. Hsu, C.H. Hsu, C.C. Tsai <i>National Chiao Tung University, Taiwan</i>
15:10-15:25	Diffusion from doped glasses deposited by	Improvement in the efficiency of SiO:H based	Fabrication and luminescence from doped

	atmospheric pressure chemical vapor deposition for industrial n-type solar cells 1-O-52 <u>Philip Rothhardt</u> ¹ , Carsten Demberger ² , Heiko Zunft ² , Kaiyun Jiang ² , Dirk Habermann ² , David Stüwe ¹ , Andreas Wolf ¹ , Daniel Biro ¹ <i>1. Fraunhofer Institute for Solar Energy Systems, Germany</i> <i>2. SCHMID GROUP, Germany</i>	single junction a-Si solar cells by using nanostructured and amorphous SiO:H layers as buffer layer at the p/i interface. 2-O-28 Sumita Mukhopadhyay ¹ , <u>A.K.Barua</u> ¹ , Chandan Banerjee ² , K. Moihanchandran ² <i>1. Bengal Engineering and Science University, India</i> <i>2. Hind High vacuum Co. Pvt. Ltd., India,</i>	nanocrystalline Si /SiO₂ multilayers 4-O-27 (15:00-15:15) <u>Weiwei Mu</u> , Hongcheng Sun, Jie Xu, Jun Xu, Wei Li, Kunji Chen <i>Nanjing University, China</i>
15:25-15:40	Improved heat dissipation for hot spots in MWT laminates 1-O-53 Mark J. Jansen, Lars A.G. Okel, René A. Van Der Schilden, Ingrid G. Romijn, Bart J. Geerligs, <u>B. Van Aken</u> <i>ECN Solar Energy, the Netherlands</i>		Efficient crystalline Si/organic heterojunction solar cells 4-O-28 (15:15-15:30) <u>Qiming Liu</u> , Ishwor Khatri, Ryo Ishikawa, Keiji Ueno, Hajime Shirai <i>Saitama University, Japan</i>
15:40-16:00	Tea Break		
16:00-18:00	Poster Session		
Friday, November 09, 2012			
	ROOM 1	ROOM 2	ROOM 3
	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells	AREA 3: CIGS, CdTe and Other Compound Semiconductor Thin Film Solar Cells	AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
8:30-8:45	Alternative insights in the microstructure of a-Si:H and nc-Si:H: a route to achieve solar cells with high stable efficiencies 2-I-6 (8:20-8:45) <u>Arno H.M. Smets</u> <i>Delft University of Technology, Netherlands</i>	Low temperature PLD growth of a polycrystalline WS₂ for photovoltaics 3-O-40 <u>Salman Alfihed</u> , Mohammad Hossain, Abdulaziz Alharbi, Ahmed Alyamani, Fahhad Alharbi <i>King Abdulaziz City for Science & Technology, Saudi Arabia, Qatar Environment & Energy</i>	

		<i>Research Institute, Qatar</i>	
8:45-9:00	Optimizing p-type microcrystalline silicon thin films by boron profiling technique 2-O-29 <u>Huizhi Ren</u> , Ying Zhao, Xiaodan Zhang, Shengzhi Xu <i>Nankai University, China</i>	Effects of Hydrofluoric Acid with Hydrophilic Solvent on Epitaxial Lift-Off Process for III-V Solar Cells Applications 3-O-41 <u>Fan-Lei Wu</u> , Ming-Chun Tseng, Chun-Li chen, Ray-Hua Horng, Chien-Heng Lu <i>National Chung Hsing University, Taiwan</i>	Highly Efficient and Stable Dye-Sensitized Solar Cells Based on SnO₂ Nanocrystals Prepared by Microwave-Assisted Synthesis 4-I-6 (8:30-8:55) Alexander Birkel ¹ , Yong-Gun Lee ² , Dominik Koll ¹ , Xavier Van Meerbeek ¹ , Stefan Frank ¹ , Mi Jin Choi ³ , <u>Yong Soo Kang</u> ³ , Kookheon Char ² , Wolfgang Tremel ¹ 1. <i>Johannes Gutenberg-University, Germany</i> 2. <i>Seoul National University, Republic of Korea</i> 3. <i>Hanyang University, Republic of Korea</i>
9:00-9:15	Expanding thermal plasma chemical vapor deposition: an efficient process for the fabrication of free standing silicon nanocrystals 2-O-30 <u>Lihao Han</u> , Arno Smets, Miro Zeman <i>Delft University of Technology, the Netherlands</i>	Optical Absorption Characteristics of GaAs Solar Cells with Four Kinds of Surface Nano Textures 3-O-42 <u>Xie Zi'ang</u> , Wang Wei, Qin Laixiang, G G Qin <i>Peking University, China</i>	High-density Coupled InGaAs Quantum Dots Solar Cells 4-O-29 (8:55-9:10) <u>K. Y. Chuang</u> , T. E. Tzeng, T. S. Lay <i>National Sun Yat-Sen University, Taiwan</i>
9:15-9:30	a-Si:H solar cell made from silicon inks 2-O-31 <u>Takashi Masuda</u> , Yasuo Matsuki, Tatsuya Shimoda <i>Japan Science and Technology Agency, Japan</i>	Metal chalcogenide complex-mediated fabrication of Cu₂S films as counter electrode in quantum dot sensitized solar cells 3-O-43 <u>Xuechao Yu</u> , Jun Zhu, Yaohong Zhang, Feng Liu, Jian Weng, Linhua Hu, Songyuan Dai <i>Chinese Academy of Sciences, China</i>	Temperature-dependent photoluminescence analysis for InGaAs/GaAsP multiple quantum wells solar cell 4-O-30 (9:10-9:25) <u>Kentaroh Waatanabe</u> , Kasidit Toprasertpong, Hiromasa Fujii, Hassanet Sodabanlu, Masakazu Sugiyama, Yoshiaki Nakano <i>The University of Tokyo, Japan</i>
9:30-9:45	Effects of laser parameter of peak power on P3 pattern process in a-Si thin film solar cell fabrication 2-O-32 <u>Ruiping Sun</u> , Hui Wang, Jicun Wang, Chao Xu, Li Lu, Xuying Shan, Dawei Wang, Tao Liu, Haijun Jia, Yaohua Mai	Investigation of physical properties of transparent conductive oxide Sn-doped ZnO thin films prepared by pulsed laser deposition 3-O-44 <u>Chin-Lung Chiou</u> ¹ , Horng-Show Koo ¹ , Lin-Song Weng ¹ , Chi-Hwa Cheng ¹ , Maw-Kuen Wu ² , Yu-Ruei Wu	Evidence of charge accumulation in GaAs/AlGaAs coupled quantum well solar cells 4-O-31 (9:25-9:40) <u>T. Noda</u> , M. Jo, T. Mano, T. Kawazu, H. Sakaki <i>National Institute for Materials Science, Japan</i>

	Baoding Tianwei Solarfims Co., Ltd., China	1. Minghsin University of Science and Technology, Taiwan, 2. Institute of Physics, Academia Sinica, Taiwan	
9:45-10:00	Characteristics of intrinsic a-Si:H passivation layers for silicon heterojunction solar cells 2-O-33 Chang Bong Yeon ^{1,2} , Kyu-Sung Lee ¹ , Sun Jin Yun ^{1,2} , Jung Wook Lim ^{1,2} 1. Electronics and Telecommunications Research Institute, Republic of Korea 2. University of Science and Technology, Republic of Korea	Blueshift of the optical absorption edge of Cu₂ZnSnS₄ thin film 3-O-45 T. Konishi, Y. Seo, H. Okamoto, T. Kuchiyama, R. Tsuji, T. Toyama, K. Yamamoto Osaka University, Japan	InGaAs/GaAsP MQWs solar cell with tunneling assisted structure for enhancing carrier transportation 4-O-32 (9:40-9:55) ShaoJun Ma, YunPeng Wang, Hassanet Sodabanlu, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano The University of Tokyo, Japan
10:00-10:30	Tea Break		
	ROOM 1		ROOM 3
	AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells		AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures
10:30-10:45	Design and fabrication of transparent electrode with efficient broadband light management for solar cells 2-O-34 Xiaodan Zhang ¹ , Susu Yang ¹ , Yanfeng Wang ¹ , Lisha Bai ¹ , Bofei Liu ¹ , Jun Fan ² , Xu Yang ¹ , Huixu Zhao ¹ , Chanchun Wei ¹ , Qian Huang ¹ , Xinliang Chen ¹ , Guangcai Wang ¹ , Ying Zhao ¹ 1. Nankai University, China 2. Hebei University of Technology, China		Fabrication of double hetero-junction Ge solar cells and properties of tensile-strained Ge 4-O-33 Akinori Yamashita, Kotaro Tadokoro, Kazuyoshi Nakada, Yasuyoshi Kurokawa, Akira Yamada Tokyo Institute of Technology, Japan
10:45-11:00	Plasmonic back reflector for high-efficiency thin-film silicon solar cells 2-O-35 Hairen Tan, Rudi Santbergen, Arno H. M. Smets, Miro Zeman Delft University of Technology, The Netherlands		Control of dip shape in photonic nanocrystals coupled with self-assembled Ge quantum dots by maskless wet etching process and its impact on optical properties 4-O-34 Y. Hoshi ¹ , W. Pan ¹ , T. Kiguchi ¹ , T. Tayagaki ^{2,3} , and N. Usami ¹

			1. Tohoku University, Japan 2. Kyoto University, Japan 3. PRESTO, Japan Science and Technology Agency, Japan
11:00-11:15	Performance of a-Si:H/a-Si:H thin-film tandem solar cell with different tunnel recombination junction structures 2-O-36 C. K. Chuang, C.H. Hsu, L. H. Lai, C.C. Tsai <i>National Chiao Tung University, Taiwan</i>		Highly periodic nanoparticle arrays for Hot Carrier solar cell applications 4-O-35 Shujuan Huang, Lara Treiber, Pengfei Zhang, Gavin Conibeer <i>University of New South Wales, Australia</i>
11:15-11:30	A study on optical absorption and structure properties of $\mu\text{c-SiGe:H}$ films deposited by high pressure and high power CVD 2-O-37 Tianwei Li, Jianjun Zhang, Yu Cao, Zhenhua Huang, Jian Ni, Ying Zhao <i>Nankai University, China</i>		Effect of annealing on the properties of silicon germanium thin film solar cells 4-O-36 Guanghong Wang, Lei Zhao, Hongwei Diao, Wenjing Wang <i>Chinese Academy of Sciences, China</i>
11:30-11:45	A solution of the trade-off between the optical and the electrical effects of the texture morphology for high performance thin-film Si solar cells 2-O-38 Shigeo Yata, Daiji Kanematsu, Yoichiro Aya, Akira Terakawa, Masahiro Iseki <i>Panasonic Corporation, Japan</i>		The passivation research of HIT solar cells interface 4-O-37 Hao Li, Xiangbo zeng, Xiaobing Xie, Ping Yang, Jingyan Li, Qiming Wang <i>Chinese Academy of Sciences, China</i>
11:45-12:00	Optimization of backside metallization for a-Si:H/$\mu\text{c-Si:H}$ thin film tandem solar cells 2-O-39 S. Liu, B. Cheng, M. Wang, X. Zhu, Z. Chen, X. Wang, X. Mei, Q. Li, B. Xu, X. Niu, and L. Yang <i>Chint Solar (Zhejiang) Co. Ltd., China</i>		Investigation of thin epitaxial Ge films on Si substrates 4-O-38 Ziheng Liu, Xiaojing Hao and Martin A. Green ARC Photovoltaics Centre of Excellence <i>University of New South Wales, Australia</i>

Poster Session

AREA 1: Crystalline Bulk Silicon Materials and Wafer-Based Solar Cells (16:00-18:00, Wednesday, Nov. 07, 2012)

1-P-01	Ab-initio research on BSb as hot carrier absorber Yao Yao, Dirk König, Robert Patterson, Martin Green <i>University of New South Wales(UNSW), Australia</i>
1-P-02	Mid-frequency magnetron sputtering silicon nitride anti-reflection and passivation films on silicon wafers Luping Tao, Siming Chen, Ruijiang Hong <i>Sun Yat-Sen University, China</i>
1-P-03	High speed laser drilling on the silicon substrate for the manufacture of MWT and EWT solar cells FuchengZheng,Zongcun Liang,Ming Huang, Hao Song <i>Sun Yat-Sen University, China</i>
1-P-04	0.4% absolute efficiency gain for inline diffused silicon wafer solar cells with single-step selective emitter process Prabir K. Basu, Jessen Cunnusamy, Debajyoti Sarangi, Edwin Carmona, Devappa Kishan Shetty, Jitheshdev Kuniyil, Matthew Boreland <i>National University of Singapore(NUS), Singapore</i>
1-P-05	PC1D simulation of the epitaxial crystalline silicon thin film solar cell Bin Ai, Youjun Deng, Jianjun Lai, Xiaojie Jia, Xiangang Zeng, Hui Shen <i>Sun Yat-sen University, China</i>
1-P-06	Defect elimination of solidphasecrystallized Poly-Si seed layer on glass by diode laser annealing Wei Li, Jonathon Dore, Sergey Varlamov, Martin Green <i>University of New South Wales(UNSW), Australia</i>
1-P-07	Optimization of Laser Doped Selective Emitter for Crystalline Silicon Solar Cells Hao Song ¹ , Zongcun Liang ¹ , Fucheng Zheng ¹ , Xuemeng Wang ² , Hui Shen ^{1,2} 1. <i>Sun Yat-sen University, China</i> 2. <i>ShunDe SYSU Institute for Solar Energy, China</i>
1-P-08	Boron back surface field made by laser doping for the thinner crystalline silicon solar cell Shouliang Sun, Hao Song, Dianlei Wang, Zongcun Liang <i>Sun Yat-sen University, China</i>
1-P-09	The study of Rapid thermal process (RTP) annealing for plated Ni/Cu contact silicon solar cells. Bing-Cyun Chen ^{1,2} , Li-Yu Li ¹ , Shih-Peng Hsu ¹ , Chen-Hsun Du ^{1,2} , Wen-Haw Lu ¹ 1. <i>Industrial Technology Research Institute,Taiwan</i> 2. <i>National Tsing Hua University, Taiwan</i>
1-P-10	Effect of chemical polish etching on performance of nanocrystalline cubic silicon carbide / crystalline silicon heterojunction solar cells Ateto E. Omondi, Junpei Irikawa, Shinsuke Miyajima, Makoto Konagai <i>Tokyo Institute of Technology, Japan</i>
1-P-11	High efficiency laser doped selective emitter solar cell on single crystalline silicon

	Zhou Chunlan¹, Zhou Su¹, Li Tao¹, Wang Wenjing¹, Zhao Lei¹, LiHailing¹, Tang Yehua¹, Diao Hongwei¹, Luo yongqiang², Duan Ye², Li Youzhong² 1. Chinese Academy of Sciences(CAS), China 2.Chinalight Solar Co. Ltd, China
1-P-12	A study on diffusion process for emitter of crystalline silicon solar cells Si-Cheol Roh, Jeong-Ho Choi, Jeong-Hwan Kim, Hwa-Il Seo Korea University of Technology and Education, Republic of Korea
1-P-13	Optimization of thin intrinsic amorphous silicon buffer layers for use in heterojunction silicon wafer solar cells Jia Ge, Zhi Peng Ling, Rolf Stangl, Armin G. Aberle, Thomas Mueller National University of Singapore (NUS), Singapore
1-P-14	Optimization of surface texturization on mono-like crystalline silicon solar cell Zhuhong Liu, Ming Chen Sun Yat-sen University, China
1-P-15	Effect of material defects on the performance of mono-like silicon solar cells Su Zhou, Chunlan Zhou, Wenjing Wang, Yehua Tang, Jingwei Chen, Baojun Yan, Yan Zhao Chinese Academy of Sciences(CAS), China
1-P-16	Modelling the light scattering properties of aluminium induced textured (AIT) glass with Fourier transform methods Nasim Sahraei, Karen Forberich, Selvaraj Venkataraj , Lipi Mohanty, Ian Marius Peters, Premachandran Vayalakkara, Armin G. Aberle National University of Singapore (NUS), Singapore
1-P-17	Separation and recycle of silicon powder in waste coolant from fixed-abrasive wire sawing for feedstock Shohei Miki, Norihisa Iio, Hiroshi Satone, Koji Arafune University of Hyogo, Japan
1-P-18	Macroporous silicon formed by metal-catalyzed electrochemical Etching Z.C. Li, L. Zhao, H.W. Diao, H.L. Li, C.L. Zhou, W.J. Wang Chinese Academy of Sciences(CAS), China
1-P-19	Gettering of n-type multicrystalline silicon solar cells by phosphorus diffusion, boron diffusion and aluminum annealing Sieu-Pheng Phang, Daniel Macdonald The Australian National University, Australia
1-P-20	Investigation of blistering effect on industrially fired PECVD AlO_x/SiN_x passivation layers Zixuan Qiu, Rolf Stangl, Johnson Wong, Bram Hoex, Armin Aberle, Thomas Mueller National University of Singapore(NUS), Singapore
1-P-21	Purity of silicon ingot made of the silicon flakes obtained by the combination of solvent refining and centrifugation from Al-Si alloy melts Jong-Sik Shin, Kum-Hee Seo, Ki-Young Kim Korea University of Technology and Education, Republic of Korea
1-P-22	Passivation properties of atomic-layer-deposition Al₂O₃ on p-type c-Si solar cells Yanbin Zhu, Zongcun Liang, Hui Shen Sun Yat-Sen University, China
1-P-23	Choice of rear dielectric stack for aluminium local back surface field (Al-LBSF) silicon wafer solar cells Fen Lin, Shubham Duttagupta, Natalia Palina, Fajun Ma, Jia Chen, Zheren Du, Armin G. Aberle, Bram Hoex

	<i>National University of Singapore(NUS), Singapore</i>
1-P-24	Surface Passivation on Crystalline Silicon with Low Optical Reflectivity and Low Surface Recombination Velocity Hideki Matsumura, Kazuya Katoh, Koichi Koyama, Keisuke Ohdaira, <i>Japan Adv. Inst. Sci. & Tech. (JAIST), Japan</i>
1-P-25	Silicon purification by fractional melting Juho Chung, Wooyoung Yoon <i>Korea University, Republic of Korea</i>
1-P-26	High FF processes for high emitter resistivity M. Aoki ¹ , N. Kojima ¹ , Y. Ohshtia ¹ , T. Tachibana ² , A. Ogura ² , M. Nakayama ³ , N. Ochiai ³ , K. Harigae ³ , K. Honda ⁴ , S. Kitada ⁴ 1. Toyota technological Institute, Japan 2. Meiji University, Japan 3. Kyoto Elex Co., Ltd. 1, Japan 4. Asada Mesh Corporation, Japan
1-P-27	Quinhydrone passivation of silicon surface and its application on the iron detection of boron doped solar wafers XiajieMeng, XushengWang, LingjunZhang <i>Canadian Solar Inc. China</i>
1-P-28	The study on the essence of the solar photovoltaic power generation Liwei Wang <i>Zhaoyuan County Teachers' Training School, China</i>
1-P-29	Increase solar cell efficiency by double printing Feng Zhang, Weiwei Yin, Xusheng Wang, Linjun Zhang <i>Canadian Solar Inc. China</i>
1-P-30	Investigation of the influence of interface defects density and bulk lifetime on the performance of silicon heterojunction solar cells by numerical simulation Jingwei Chen, Lei Zhao, Hongwei Diao, Baojun Yan, Ge Wang, Su Zhou, Yehua Tang, Wenjing Wang <i>Chinese Academy of Sciences(CAS), China</i>
1-P-31	A comparative study of dry and wet passivation technique on industrial p-type silicon wafers Sanjai Kumar, V. K. Kaul <i>Central Electronics Limited, India</i>
1-P-32	Introduction of nano-porosity black silicon solar cells Yehua Tang ¹ , Chunlan Zhou ¹ , Wenjing Wang ¹ , Su Zhou ^{1,2} , Yan Zhao ¹ , Jingwei Chen ¹ , Baojun Yan ¹ , Jianming Fei ² , Hongbin Cao ² 1. Chinese Academy of Sciences(CAS), China 2. Eoply New Energy Technology Co., Ltd., China
1-P-33	Fixed charge density of alumina films deposition by thermal ald under different deposition temperatures Yan Zhao
1-P-34	The study of enhancing IR absorption of heavily Ti-doped silicon Yurong Zhou, Fengzhen Liu, Meifang Zhu

	<i>Chinese Academy of Sciences(CAS), China</i>
1-P-35	A comparative study of vertical and horizontal diffusion furnace with CFD method Lihong Hou, Zuming Liu, Weidong Zhang, Yifen Zhao, Hairong Wang, Xun Ma, Lanxian Shen, Wenyi Wang, Xunmeng Zhu, Jinyu Zan, Jiangang Zhang <i>Yunnan Normal University, China</i>
1-P-36	Investigation on metal induced losses in bifacial n-type silicon solar cells Alexander Edler, Valentin D. Mihailetschi, Corrado Comparotto, Lejo J. Koduvelikulathu, Radovan Kopecek, Rudolf Harney <i>International Solar Energy Research Center (ISC), Germany</i>
1-P-37	Limits for short-pulse laser processing of high efficiency crystalline silicon solar cells on thin wafers Udo Römer ¹ , Felix Haase ¹ , Tobias Neubert ¹ , Jan-Hendrik Petermann ¹ , Robby Peibst ¹ , Nils-Peter Harder ^{1,2} , Sarah Kajari-Schröder ¹ , Rolf Brendel ^{1,2} <i>1. Institute for Solar Energy Research Hamelin (ISFH), Germany</i> <i>2. Leibniz Universität Hannover, Germany</i>
1-P-38	Low-temperature diffusion of Al into amorphous Si layers and its application in Si hetero-junction solar cell fabrication Tzu-Yao Shen, Chie-Sheng Liu, Chun-Yen Hsu, Chia-Yin Wu, and Lu-Sheng Hong <i>National Taiwan University of Science and Technology, Taiwan</i>
1-P-39	Minority impurity scattering and mobility in compensated silicon F. E. Rougieux, M. Forster, D. Macdonald, A. Cuevas <i>The Australian National University, Australia</i>
1-P-40	Low temperature doping of P and B atoms into crystalline Si by catalytically generated species from PH₃ and B₂H₆ Tatsunori Ota ^{1,2} , Koichi Koyama ^{1,2} , Keisuke Ohdaira ¹ , Hideki Matsumura ^{1,2} <i>1. Japan Adv. Inst. Sci. and Tech. (JAIST), Japan</i> <i>2. JST-CREST, Japan</i>
1-P-41	Measurement of capacitance of solar cell by intensity modulation current transfer function spectroscopy Anon Namin ¹ , Jutturit Thongpron ¹ , Dhirayut Chenvithya ² , Chaya Jivacate ² , and Krissanapong Kirtikara ² <i>1. Rajamangala University of Technology Lanna, Thailand</i> <i>2. King Mongkut's University of Technology Thonburi, Thailand</i>
1-P-42	Studying dissolution and precipitation of Fe at grain boundaries in multicrystalline silicon wafers via photoluminescence imaging AnYao Liu, Daniel Walter, Sieu Pheng Phang, Daniel Macdonald <i>The Australian National University, Australia</i>
1-P-43	Large scale nanotexture on silicon solar cell emitter by Ag-assisted catalytic chemical etching Dan Li ¹ , Lei Wang ¹ , Ning Zhou ¹ , Dongsheng Li ¹ , Zhiqiang Feng ² , Xiaoping Zhong ² , Deren Yang ¹ <i>1. Zhejiang University, China</i> <i>2. Zhejiang Shuqimeng Photovoltaic Technology Co., Ltd, China</i>
1-P-44	The study of surface passivation of silicon heterojunction solar cells Jing Wang, Shuo Wang, Ying Zhao, Xiaodan Zhang, <i>Nankai University, China</i>
1-P-45	The effect of back surface field formation on the front side plated electrode solar cell Jisoo Kim, Keun-kee Hong, Kyeong-Yeon Cho, Eun-Joo Lee <i>Shinsung Solar Energy, Republic of Korea</i>

1-P-46	Ion shower doping for selective emitter formation in crystalline silicon solar cells H. Hashiguchi ¹ , T. Tachibana ^{1,2} , M. Aoki ³ , T. Kojima ³ , Y. Ohshita ³ , and A. Ogura ¹ 1. <i>Meiji University, Japan</i> 2. <i>JSPS Research Fellow, Japan</i> 3. <i>Toyota Tech. Inst., Japan</i>
1-P-47	Upgraded metallurgical grade silicon for high efficiency : an oxymoron? Jed Kraiem ¹ , Pierre Papet ² , Maxime Forster ¹ , Julien Degoulange ¹ , Oleksiy Nichiporuk ¹ , Delphine Grosset-Bourbange ³ , Roland Einhaus ¹ , François Cocco ³ 1 <i>Apollon Solar, France</i> 2 <i>Roth&Rau, Switzerland</i> 3 <i>FerroPEM, France</i>
1-P-48	Colored ribbons achieve +0.3%_{abs.} module efficiency gain Lars Hamann ¹ , Liv Proenneke ¹ , Michael Reuter ² , Juergen H. Werner ^{1,2} 1. <i>University of Stuttgart, Germany</i> 2. <i>Steinbeis Center Photovoltaics, Germany</i>
1-P-49	Hybridization of plasmonic nanoparticles with quantum dots for improved solar light harvesting Baohua Jia, Xi Chen, Min Gu <i>Swinburne University of Technology, Australia</i>
1-P-50	Determining the characteristics of the boron-oxygen defect generation in the compensated p-type silicon Yichao Wu, Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>
1-P-51	Influence on the formation and diffusion of oxygen dimer in germanium-doped Czochralski silicon Peng Chen, Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>
1-P-52	Alternative front side metallization solution for wafer-si solar cells based on abundant metal and ink-jet print technique Lifei Yang, Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>
1-P-53	The light-induced dissociation kinetics of iron-boron pairs in solar grade silicon Xiaodong Zhu, Xuegong Yu, Jian He, Deren Yang <i>Zhejiang University, China</i>
1-P-54	Effect of chromium contamination on grain boundary states at a direct silicon bonded (110)/(100) interface Tingting Jiang, Xuegong Yu, Deren Yang <i>Zhejiang University, China</i>
1-P-55	Effect of geometry and edge defects on the mechanical strength of silicon wafers for solar cell Linyan liu, Jianting Gao, Yuepeng Wan, Liyuan Sun, Tao Zhang and Xiaojuan Cheng, <i>LDK solar Co., Ltd, China</i>
1-P-56	Characteristics of intrinsic a-Si:H passivation layers for silicon heterojunction solar cells Chang Bong Yeon ^{1,2} , Kyu-Sung Lee ¹ , Sun Jin Yun ^{1,2} , Jung Wook Lim ^{1,2} 1. <i>Electronics and Telecommunications Research Institute, Republic of Korea</i>

	<i>2. University of Science and Technology, Republic of Korea</i>
1-P-57	New approach for modeling effect of phosphorous diffusion on minority carrier lifetime in multicrystalline silicon wafers Bentalhoda Soleimany, Ebrahim Asl-Soleimani <i>University of Tehran, Iran</i>
1-P-58	The characteristics of sub-grains in the mono-like silicon crystals grown with directional solidification method Dongli Hu, Tao Zhang, Liang He, Hongrong Chen, Dejing Zhong, Sheng Cao, Jianting Gao, Yuepeng Wan <i>LDK solar Co., Ltd, China</i>
1-P-59	Study of PECVD silicon nitride for surface and bulk passivation of silicon solar cell using quantum efficiency He Qun, Ho Soon Seng and Low Lee Ngo <i>Singapore Polytechnic, Singapore</i>
1-P-60	Etch back selective emitter technology and comparison He Qun, Ho Soon Seng and Low Lee Ngo <i>Singapore Polytechnic, Singapore</i>
1-P-61	First-principles study of interstitial boron and oxygen dimer(B_iO_{2i}) complex in Silicon Xianzi Chen, Xuegong Yu, Xiaodong Zhu, Peng Chen, Deren Yang <i>Zhejiang University, China</i>
1-P-62	A study of HF treatment for enhancing silicon solar cell characteristics Seongtak Kim, Sungeun Park, Young Do Kim, Sung Ju Tark, Donghwan Kim <i>Korea University, Republic of Korea</i>
1-P-63	Comparative study of vertical and horizontal diffusion furnace with CFD method Lihong Hou, Zuming Liu, Weidong Zhang, Yifen Zhao, Hairong Wang, Xun Ma, Lanxian Shen, Wenyi Wang, Xunmeng Zhu, Jinyu Zan, Jiangang Zhang <i>Yunnan Normal University, China</i>
1-P-64	Theoretical optimization of the back-contact back-junction solar cell with a micro-groove structure Jianfeng Yang, Bo Zhang, Fei Mo <i>University of Electronic Science and Technology of China, China</i>
1-P-65	The study of Ni/Cu plated contacts for commercial crystalline Si solar cells over 20% efficiency Kyeong-Yeon Ch ¹ , Keun-Kee Hon ¹ , Jisoo Ki ¹ , Eun-Joo Lee, Hyun-Woo Lee, Dong-Joon Oh and Hae-Seok Lee <i>Shinsung Solar Energy, Republic of Korea</i>
1-P-66	Surface morphology and composition characterizations of virgin poly-Si chunks Zhizhong Yuan
AREA 2: Amorphous, Microcrystalline and Nanocrystalline Silicon Thin Film Solar Cells (16:00-18:00, Wednesday, Nov. 07, 2012)	
2-P-01	Chemical mist deposition of graphene oxide (GO) and PEDOT:PSS films for crystalline Si thin-film solar cells Ishwor Khatri, Masahiro Imamura, Ryo Ishikawa, Keiji Ueno, and Hajime Shirai <i>Saitama University, Japan</i>
2-P-02	Simulation study of n-layer electrical properties in the performance of amorphous silicon thin-film solar cells Yu-Hung Chen ¹ , Chin-Yuan Hsu ² , Yung-Tsung Liu ¹ , Jun-Chin Liu ¹ , Yo-Sheng Lin ²

	1. Industrial Technology Research Institute, Taiwan. 2. National Chi Nan University, Taiwan.
2-P-03	Monolithic amorphous silicon modules on polyimide substrate Liang Chen, Ninghua Ma, Zhenchun Chen, Wencang Zhou, Shuai Jiang, Xiaoshun Wang, Daoyuan Tang, Junkun Yang, Lihua Zhou, Cheng Liu, Xiaojun Ye <i>Shanghai Institute of Space Power Sources, China</i>
2-P-04	Effect of annealing on the properties of silicon germanium thin film solar cells Guanghong Wang, Lei Zhao, Hongwei Diao, Wenjing Wang <i>Chinese Academy of Sciences(CAS), China</i>
2-P-05	Influence of band gap grading and buffer layers on the performance of a-SiGe:H solar cells on flexible substrates Junkun Yang, Cheng Liu, Zhengjun Xu, Botao Duan, Xiaojun Ye <i>Shanghai Institute of Space Power Sources, China</i>
2-P-06	Enhance current density by nano-enabled plasmonic light trapping structure for a-Si thin film solar cells Hau-Vei Han¹, Ping-Chen Tseng¹, Peichen Yu¹, Hsin-Chu Chen¹, Chien-Lang Chiang¹, Cheng-Ying Yang¹, Hao-Chung Kuo¹, and Gong Ru Lin² 1. National Chiao Tung University, Taiwan 2. National Taiwan University, Taiwan
2-P-07	Spectroscopic simulating to optimize ITO for a-Si based solar cells Botao Duan, Xiaojun Ye, Cheng Liu, Shuai Jiang, Wencan Zhou, Yixiang Zhang, Junkun Yang <i>Shanghai Institute of Space Power Sources, China</i>
2-P-08	Simulation on broadband antireflection and absorption enhancement by diffraction grating for silicon thin film solar cells Lei Zhao, Zhaochen Li, Baojun Yan, Jingwei Chen, Guanghong Wang, Hongwei Diao, Wenjing Wang <i>Chinese Academy of Sciences(CAS), China</i>
2-P-09	Influence of ammonia solution on zinc oxide nanostructures by hydrothermal growth ZB Huang, XP Zou, CL Wei, Z Sun, HQ Zhou <i>Beijing Information Science and Technology University, China</i>
2-P-10	Impact of the n+ emitter layer on the performance of SPC poly-Si thin-film solar cells on glass A. Kumar, H. Hidayata, F. Lawa, P.I. Widenborg, A.G. Aberlea, <i>National University of Singapore(NUS), Singapore</i>
2-P-11	Silicon nanowire-based microcrystalline silicon thin film solar cells Xiaobing Xie, Xiangbo Zeng, Ping Yang, Hao Li, Jingyan Li, Qiming Wang <i>Chinese Academy of Sciences(CAS), China</i>
2-P-12	Design of plasmonic grade gratings structure for efficiency enhancement of thin film amorphous Si solar cells Lijuan Yu, Yuhua Zuo, Jun Zheng <i>Chinese Academy of Sciences(CAS), China</i>
2-P-13	Influence of the window layer material on the performance of amorphous silicon thin-film solar cells Wang Juan, Long Jidong, Ren Zekun, Yin Yunfeng, Premachandran Vayalakkara, Armin G. Aberle <i>National University of Singapore(NUS), Singapore</i>
2-P-14	Effects of negative cathode bias voltage in reactive sputtering of microcrystalline silicon Toshinori Yamada, Yasuyuki Taniuti, Haruo Shindo, Masao Isomura

	<i>Tokai University, Japan</i>
2-P-15	Study of mechanism of the improvement of microcrystalline silicon solar cells by hydrogen plasma treatment Jingyan Li, Xiangbo Zeng, Hao Li, Xiaobing Xie, Ping Yang, Haibo Xiao, Qiming Wang <i>Chinese Academy of Sciences(CAS), China</i>
2-P-16	Study of deposition back reflectors on plastic substrate by Roll-to-Roll sputter for amorphous silicon solar cell Shuai Jiang, Wencan Zhou, Xiaoshun Wang, Lihua Zhou, Daoyuan Tang, Junkun Yang, Cheng Liu, Xiaojun Ye <i>Shanghai Institute of Space Power Sources, China</i>
2-P-17	Design and simulation of photonic crystal-based back reflector for silicon thin film solar cell Guofu Hou ^{1,2} , Zhenggang Wang ^{1,2,3} , Xiaodan Zhang ^{1,2} , Ying Zhao ^{1,2} 1. <i>Nankai University, China</i> 2. <i>Tianjin Key Laboratory of Photoelectronic Thin Film Devices and Technique, China</i> 3. <i>Hebei University of Technology, China</i>
2-P-18	Influence of hydrogen dilution ratio and substrate roughness on the microstructure of intrinsic microcrystalline silicon thin films Baojun Yan, Lei Zhao, Hongwei Diao, Guanghong Wang, Jingwei Chen, Wenjing Wang <i>Chinese Academy of Sciences(CAS), China</i>
2-P-19	Study of sputter deposition of ITO films for large-area a-Si solar cells on flexible substrate Wencan Zhou, Xiaojun Ye, Shuai Jiang, Yixiang Zhang, Botao Duan <i>Shanghai Institute of Space Power Sources, China</i>
2-P-20	Study of $\mu\text{c-Si:H}$ thin films and its application to thin film solar cells on flexible substrate Yuan Wang, Hongkun Cai, Yuquan Zhong, Fengyou Wang, Yannan Li, Dexian Zhang <i>Nankai University, China</i>
2-P-21	Patterning of large area aluminium doped zinc oxide films using 355 nm laser Yan Feng, Tiantai He, Jia Liu, Li Zhang, Meiyan Geng, Qingtao Pan, Tao Liu, Haijun Jia, Yaohua Mai <i>Baoding Tianwei Solar films Co., Ltd, China</i>
2-P-22	New etching progress to tune crater size Jia. Liu, Yan. Feng, Tiantai. He, Xin. Song, Qintao. Pan, Hongbing.Zhu,Tao Liu, Haijun. Jia, Yaohua. Mai <i>Baoding Tianwei Solar films Co., Ltd, China</i>
2-P-23	Efficiency improvement of amorphous thin film silicon see-through solar modules by new laser scribing method Jicun Wang, JieDu, Hui Wang, Ruiping Sun, Chao Xu, Li Lu, Xuying Shan, Dawei Wang, Tao Liu, Haijun Jia, Yaohua Mai <i>Baoding Tianwei Solar films Co., Ltd, China</i>
2-P-24	The effect of hydrogen on the microstructure of silicon based thin films by surface morphology evolution analyses Hailong Zhang, Fengzhen Liu, Meifang Zhu <i>Chinese Academy of Sciences(CAS), China</i>
2-P-25	Photovoltaic effect of large-grain polycrystalline silicon films formed by flash lamp annealing Keisuke Ohdaira ^{1,2} , Sergey Varlamov ³ 1. <i>Japan Advanced Institute of Science and Technology, Japan</i> 2. <i>Japan Science and Technology Agency, Japan</i> 3. <i>University of New South Wales, Australia</i>

2-P-26	Optimum performance simulation of a three-dimensional amorphous silicon thin-film solar cell with diffraction grating Huai-Yi Chen ¹ , Hui-Ming Lin ¹ , Sheng-Hao Chen ¹ , Horng-Show Koo ² 1. <i>Huafan University, Taiwan</i> 2. <i>Minghsin University of Science and Technology, Taiwan</i>
2-P-27	New research and development center for thin-film technology in photovoltaics Terukova E.E. ¹ , Orehov D.L. ² , Abramov A.S. ¹ , Terukov E.I. ¹ , Krebs A.R. ¹ , Shvarts M.Z. ¹ , Andronikov D.A. ¹ , Semenov A.V. ¹ 1. <i>Ioffe Institute LLC, Russia</i> 2. <i>Hevel LLC, Russia</i>
2-P-28	Development of novel structure a-SiO_x:H/a-Si_{1-x}Ge_x:H tandem cell for high-efficiency thin-film solar cell applications Y.W. Tseng, Y.H. Lin, H.J. Hsu, C.H. Hsu, C.C. Tsai <i>National Chiao Tung University, Taiwan</i>
2-P-29	Temperature-dependant growth and properties of W-doped ZnO thin films deposited by reactive magnetron sputtering Chi Zhang, Xin-Liang Chen, Fei Wang, Qian Huang, Ying Zhao, Xiao-Dan Zhang, Xin-Hua Geng <i>Nankai University, China</i>
2-P-30	Application research of polystyrenes sphere self-assemble technology on three-dimension thin film solar cells Haibo Gao, Bofei Liu, Shuo Wang, Yanfeng Wang, Li Wang, Xiaodan Zhang, Ying Zhao <i>Nankai University, China</i>
2-P-31	Sputtered ZnO with different surface topography for use as transparent electrode in microcrystalline silicon solar cells Susu Yang, Xiaodan Zhang, Qian Huang, Xu Yang, Changchun Wei, Guofu Hou, Xinliang Chen, Jian Sun, Ying Zhao <i>Nankai University, China</i>
2-P-32	Optimization of the intrinsic layer for NIPa-Si_{1-x}Ge_x:H solar cell Feillian Liu, Jun Ma, Guofu Hou, Jian Ni, Yanhui Zhang, Jian Sun, Ying Zhao <i>Nankai University, China</i>
2-P-33	The transient impedance of VHF glow discharging Shengzhi Xu, Xiaodan Zhang, Ying Zhao <i>Nankai University, China</i>
2-P-34	The study of intrinsic a-SiO_x:H materials used as wide-band gap absorber in thin film solar cells Shuo Wang, Jing Wang, Xiaodan Zhang, Shaozhen Xiong, Ying Zhao <i>Nankai University, China</i>
2-P-35	Effective light trapping in wide range of the solar spectrum for silicon thin film solar cells Yanfeng Wang, Qian Huang, Changchun Wei, Dekun Zhang, Ying Zhao, Xiaodan Zhang <i>Nankai University, China</i>
2-P-36	Highly conductivity boron doped nanocrystalline silicon carbide fabrication and its application for solar cell Teng-Hsiang Chang, Yen-Ho Chu, Chien-Chieh Lee, Jenq-Yang Chang <i>National Central University, Taiwan</i>
2-P-37	Highly crystalline silicon thin films grown by ECRCVD for the applications of crystalline silicon solar cells C. C. Lee, Y. H. Chu, T. H. Chang, D. P. Cai, J.Y. Chang, Tomi Li <i>National Central University, Taiwan</i>

2-P-38	Improvement of blue response in p-type hydrogenated silicon oxide thin film prepared from (SiH₄+B₂H₆+H₂+N₂O) plasma in RF-PECVD for the application of amorphous silicon solar cell Chonghoon Shin, Jinjoo Park, Seungshin Baek, Juyeon Jang, Minbum Kim, Junhee Jung, S.M. Iftiqar, Younjung Lee, Sangho Kim, Junsin Yi <i>Sungkyunkwan University, Republic of Korea</i>
2-P-39	P×d product as an evaluation factor for the amorphous/crystalline silicon interface passivation quality Sangho Kim, Vinh-Ai Dao, Choonghon Shin, Jinjoo Park, Youngseok Lee, Junsin Yi <i>Sungkyunkwan University, Republic of Korea</i>
2-P-40	Improvement of the effective carrier lifetime of a-Si:H layers for heterojunction c-Si solar cells Jin Hyuk Jung, Jin Jang <i>Kyung Hee University, Republic of Korea</i>
2-P-41	Si nano-structures fabricated by nano-sphere lithography for the heterojunction solar cells Shenghua Sun, Peng Lu, Jie Xu, Jun Xu, Yu Liu, Ling Xu, Kunji Chen <i>Nanjing University, China</i>
2-P-42	Effect of thickness on the properties of boron-doped zinc oxide transparent conductive thin films by pulsed magnetron sputtering Qilin Hua, Peizhi Yang, Juan Lin, Xingfa Zi, Ye Tu, Shuang Deng, Liangfei Duan, Liyuan Zhang, Liujun Peng <i>Yunnan Normal University, China</i>
2-P-43	Growth of amorphous-layer-free nanocrystalline silicon films : roles of hydrogen and plasma excitation frequency Yanqing Guo, Rui Huang, Jie Song, Xiang Wang, Chao Song <i>Hanshan Normal University, China</i>
2-P-44	Research on large-area α-si:h/α-si:h tandem solar cells on polyimide substrate by roll-to-roll technology Ye Xiaojun, Zhou Lihua, Tang Daoyuan, Wang Xiaoshun, Jiang Shuai <i>Shanghai Institute Of Space Power Sources, China</i>
2-P-45	The development of flexible tandem type μ-Si:H film by homemade in-line PECVD Min-Chuan Wang, Cheng-Chang Hsieh, Ching-Pei Tseng, Ding-Guey Tsai, Tzu-Ching Hsu, Der-Jun Jan, Wen- Fa Tsai, Chi-Fong Ai <i>Institute of Nuclear Energy Research, Taiwan</i>
2-P-46	Fabrication of large-area amorphous silicon solar cells on flexible substrate using roll-to-roll technology Zhou lihua, Ye xiaojun, Tang daoyuan, Wang xiaoshun, Jiang shuai <i>Shanghai Institute Of Space Power Sources, China</i>
2-P-47	Optical studies of amorphous silicon thin films Evgeniy Baranov, Alexander Zamchii, Sergey Khmel <i>the Russian Academy of Sciences, Russia</i>
2-P-48	Amorphous silicon/ amorphous silicon germanium tandem solar cells on flexible polyimide substrates Cheng Liu, Zhengjun Xu, Junkun Yang <i>Shanghai Institute of Space Power Sources, China</i>
2-P-49	Development of micromorph silicon solar cells on thin flexible substrates Cheng Liu, Lihua Zhou, Xiaoshun Wang, Daoyuan Tang, Junkun Yang, Mingbo Chen <i>Shanghai Institute of Space Power Sources, China</i>
2-P-50	PECVD of microcrystalline silicon: obtaining dense and stable material on rough substrate for high efficiency thin film silicon solar cells

	Gaetano Parascandolo , Grégory Bugnon, Laura Ding, Simon Hänni, Matthieu Despeisse, Fanny Meillaud, Sylvain Nicolay, Christophe Ballif <i>École Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
2-P-51	Influence of dopant contamination on amorphous silicon thin film solar cells Yoo Jeong Lee ^{1,2} , Sun Jin Yun ^{1,2} , Jung Wook Lim ^{1,2} 1. <i>Electronics and Telecommunications Research Institute, Republic of Korea</i> 2. <i>University of Science and Technology, Republic of Korea</i>
2-P-52	Effects of Aluminum Doping Concentration on Magnetron Sputtered AZO Thin Films for Photovoltaic Applications Yanru He, Lingling Dai, Zhifang Lei, Guangyu Chen, Ce Zhang, Guanchao Zhao, Rong Yang, Yuan Meng, Tie Guo, Liwei Li <i>ENN Solar Energy Co., Ltd., China</i>
AREA 3: Thin Film Compound Semiconductor Solar Cells (16:00-18:00, Thursday, Nov. 08, 2012)	
3-P-01	Na-doped Mo target sputtering for large area CIGS solar cells applications Y. C. Lin, Y. Y. Tu <i>National Changhua University of Education, Taiwan</i>
3-P-02	Fabrication and characterization of MoSe₂ by PVD process between Mo thin film and Se vapor Huan-Shin Sung ¹ , Zue-Chin Chang ² , Fuh-Sheng Shieu ¹ 1. <i>National Chung Hsing University, Taiwan.</i> 2. <i>National Chin-Yi University of Technology, Taiwan</i>
3-P-03	Study of GaN homo- and heterojunctions for photovoltaic (PV) applications G. Contreras-Puente ¹ , O. de Melo-Pereira ^{1,2} , M. López-López ³ , M. Ramirez-Lopez ³ , M. Pérez-Caro ³ , Y.L. Casallas-Moreno ³ , F. de Moure Flores ¹ , L.A. Hernández-Hernández ¹ , J. Aguilar-Hernández ¹ , E. Hernández-Cruz ¹ , G. Santana-Rodríguez ⁴ , R. Mendoza-Pérez ⁵ , A. Escamilla-Esquivel ¹ , L. Zamora ⁶ , A. Cantarero ⁷ , M. Tufiño-Velázquez ¹ 1. <i>Escuela Superior de Física y Matemáticas-IPN, México</i> 2. <i>Facultad de Física-Universidad de la Habana, Cuba</i> 3. <i>Centro de Investigación y de Estudios Avanzados-IPN, México</i> 4. <i>Instituto de Investigaciones en Materiales-UNAM, México</i> 5. <i>Universidad Autónoma de la Ciudad de Mexico, México</i> 6. <i>Centro de Investigaciones en Micro- y Nanotecnologías-Universidad Veracruzana, Mexico</i> 7. <i>Universidad de Valencia, España</i>
3-P-04	Investigation on the properties of Sb-doped CdTe thin films by vacuum evaporation Feng Song, Li Rongping, Tian Lei <i>Inner Mongolia University, China</i>
3-P-05	Microwave photoconductivity study for the recombination process in CIGS thin films Ming-Jer Jeng ¹ , Konstantin Bocharov ² , Tsung-Yen Hsieh ¹ , Gennady Novikov ² 1. <i>Chang-Gung University, Taiwan</i> 2. <i>RAS Chernogolovka, Russia</i>
3-P-06	Influnense of Cu₂ZnSnS₄(CZTS) thin film solar cells at different annealing temperature and sulfur concentration

	Ting-Wei Kuo, Tung-Tung Chen , Ching-Hsiang Chiu , Horng-Show Koo , Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>
3-P-07	Cu₂ZnSn(S,Se)₄ thin films by sputtering, obtained at different temperatures on the structural and morphological characteristics Ji-Wei Lou, Ching-Hsiang Chiu, Tung-Tung Chen, Horng-Show Koo, Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>
3-P-08	Structural and optoelectronic characteristics of CZT precursor selenized at different temperatures Wen-Shiang Tsai, Ching-Hsiang Chiu, Tung-Tung Chen, Horng-Show Koo, Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>
3-P-09	Y-doped effects on properties of CdS thin films Lei Tian, Rongping Li, Song Feng, Kai Zhou, Yongsheng Liu <i>Universities of Inner Mongolia Autonomous Region, China</i>
3-P-10	Hierarchical ZnO nanostructure on steel substrate by electrochemical deposition BL Zhang ¹ , XP Zou ^{1,2} , XM Lv ¹ , GQ Yang ¹ , CL Wei ¹ , Z Sun ¹ , ZB Huang ¹ , HQ Zhou ¹ , XF Wu ² 1. Beijing information Science and Technology University, China 2. Chinese Academy of Sciences(CAS), China
3-P-11	Nanoparticles for CIGS thin film solar cells Shu Zhang, Xiaokun Zhang, Longyan Gu, Feng Jia, Jianfei Zhang, Yong Xiang <i>University of Electronic Science and Technology of China, China</i>
3-P-12	Solvothermal synthesis of CIGS nanomaterials Xiaokun Zhang, Longyan Gu, Yong Xiang, Shu Zhang <i>University of Electronic Science and Technology of China, China</i>
3-P-13	Preparation of transparent conductive Nb₂O₅:ZnO thin films by pulsed laser deposition technique Chih-Wei Wu ¹ , Horng-Show Koo ¹ , Chi-Hwa Cheng ¹ , Maw-Kuen Wu ² , Min-Hsuch Wen ² 1. Minghsin University of Science and Technology, Taiwan 2. Academia Sinica, Taiwan
3-P-14	Cu-Zn-Sn-O precursor fabricated by sputtering for Cu₂ZnSnS₄ thin film Ryo Ishino ¹ , Kazuhiro Fukushima ² , Takashi Minemoto ¹ 1. Ritsumeikan University, Japan 2. Promatequ Corporation, Japan
3-P-15	A low cost route to phase controllable Cu₂ZnSn(Se,S)₄ nanocrystals with tunable bandgap Shulin Ji, Changhui Ye <i>Chinese Academy of Sciences(CAS), China</i>
3-P-16	Study of various thicknesses and annealing temperature on the electrical properties of intrinsic-zinc oxide (i-ZnO) buffer layer film for solar cells application Jamilah Husna, M. Mannir Aliyu, P. Chelvanathan, M. A. Islam, Nowshad Amin <i>Universiti Kebangsaan Malaysia, Malaysia</i> <i>King Saud University, Saudi Arabia</i>
3-P-17	Fabrication of large-grained BaSi₂ epitaxially films for high-efficiency thin-film solar cells

	M. Baba¹, K. Nakamura¹, W. Du, M. A. Khan¹, S. Koike¹, K. Toko¹, N. Saito², N. Yoshizawa², N. Usami^{3,4}, T. Suemasu^{1,4} 1. University of Tsukuba, Japan 2. AIST, Japan 3. Tohoku University, Japan 4. JST-CREST, Japan
3-P-18	Advances in nonconventional solar cell materials Mohammad Hossain, Fahhad Alharbi Qatar Environment & Energy Research Institute, Qatar King Abdulaziz City for Science & Technology, Saudi Arabia
3-P-19	One-step hydrothermal process of CuInSe₂ thin films on Ti foils for thin-film solar cells Chung-Hsien Wu¹, Shin-Hom Lin¹, Jeng-Shin Ma¹, Chung-Hsin Lu¹, Wang-Lin Liu², Hsiao-Chun Chu², Shin-Hung Chen² 1. National Taiwan University, Taiwan 2. Precision Machinery Research Development Center, Taiwan
3-P-20	Preparation and formation mechanism of silver gallium selenide powders prepared via the sol-gel method Guo-Ruei Chiu¹, Fu-Shan Chen¹, Jen-Cheng Sung¹, Chung-Hsin Lu¹, Wang-Lin Liu², Hsiao-Chun Chu², and Shin-Hung Chen² 1. National Taiwan University, Taiwan 2. Precision Machinery Research Development Center, Taiwan
3-P-21	Effect of sulfurization on CIGS thin films prepared by RF sputtering using a single target Sung Hee Jung, Rong Fan, Chee Won Chung Inha University, Republic of Korea
3-P-22	Studies on effect of heating rates on the properties of Cu₂ZnSnS₄ (CZTS) thin films by sulfurization of stacked precursor thin films Seung Wook Shin¹, Jun Hee Han¹, Jae Ho Yun², Jong-Ha Moon³, Jin Hyeok Kim³, and Jeong Yong Lee¹ 1. KAIST, Republic of Korea 2. Korea Institute of Energy Research, Republic of Korea 3. Chonnam National University, Republic of Korea
3-P-23	Influence of the deposition temperature on the performance of transparent conductive indium tin oxide thin films prepared by radio frequency magnetron sputtering Ge Wang, Lei Zhao, Jingwei Chen, Baojun Yan, Hongwei Diao, Guanghong Wang, Wenjin Wang Chinese Academy of Sciences(CAS), China
3-P-24	A facile and low cost synthesis of Cu₂ZnSnS₄ nanocrystals formed by hydrothermal method Woo Ri Bae¹, Seung Wook Shin², G.L. Agawane¹, Jong Ha Moon¹, Jeong Yong Lee², Yeon Chan Park¹ and Jin Hyeok Kim¹, Jae Ho Yun³ 1. Chonnam National University, Republic of Korea 2. KAIST, Republic of Korea 3. Korea Institute of Energy Research, Republic of Korea
3-P-25	Synthesize nanocrystals of Cu₂ZnSnS₄ through the solvothermal process Yiling Sun, Shu Zhang, Yong Xiang University of Electronic Science and Technology of China, China
3-P-26	Low resistivity of Ga-doped ZnO films grown by atmospheric spray pyrolysis

	Kenji Yoshino¹, Akiko Ide¹, Naomi Kamiya¹, Minoru Oshima¹, Ayako Nagano¹, Yujin Takemoto², Kouji Toyota², Koichiro Inaba², Ken-ichi Haga², KouichiTokudome² 1. University of Miyazaki, Japan. 2. Tosoh Finechem Corporation, Japan
3-P-27	Influence of Cu₂ZnSnS₄(CZTS) thin film solar cells at different annealing temperature and sulfur concentration. Ting-Wei Kuo, Tung-Tung Chen , Ching-Hsiang Chiu , Horng-Show Koo , Chi-Hwa Cheng Minghsin University of Science and Technology, Taiwan
3-P-28	Dominance of multi-phonon emission in the electron-capture cross section of gap states in GaAsN grown by chemical beam epitaxy Boussairi Bouzazi, Nobuaki Kojima, Yoshio Ohshita, Masafumi Yamaguchi Toyota Technological Institute, Japan
3-P-29	Growth of wide bandgap CdS thin films as window layers of ultra thin CdTe solar cells M. A. Islam, M. S. Hossain, M. M. Aliyu, J. Husna, Q. Huda, K. Sopian, N. Amin Universiti Kebangsaan Malaysia, Malaysia
3-P-30	Performance analysis of novel Cu₂ZnSnS₄ (CZTS) solar cells by solar cell capacitance simulator (SCAPS) A. Shahi, P. Chelvanathan, M. Zaman, M. I. Hossain, K. Sopian, N. Amin Universiti Kebangsaan Malaysia, Malaysia
3-P-31	Fabrication of Ultra Thin (<1μm) CdTe Films by RF Sputtering for CdTe Solar Cells M. M. Aliyu, M. S. Hossain, Q. Huda, A. Islam, K. Sopian, N. Amin Universiti Kebangsaan Malaysia, Malaysia
3-P-32	Nanocrystals formation via polymer brushes templated synthesis for solar light harvesting Junfeng Yan, Xiuxun Han, Feng Zhou Chinese Academy of Sciences(CAS), China
3-P-33	Influence of Na incorporation on the sub-micrometer Cu(In,Ga)Se₂films and solar cells performance Anjun Han,Yi Zhang, Wei Liu,Boyan Li, Jingjing He, Zhiguo Li, Yun Sun Nankai university, China
3-P-34	Ordered textured zinc oxide films with anodic aluminum oxide template assistant Xiaoyuan Lin^{1,2}, Qian Huang¹, Dekun Zhang¹, Cunshan Zhang², Ying Zhao¹, Xiaodan Zhang¹ 1. Nankai university, China 2. Hebei University Of Technology, China
3-P-35	Highly-textured surface MOCVD-ZnO:B TCO films deposited with gradual doping growth technique Xu Yang, Xinliang Chen, Jianjun Zhang, HuiXu Zhao, Yanhui Zhang, YingZhao, Xiaodan Zhang Nankai University, China
3-P-36	Textured surface ZnO:B TCO layers for thin-film solar cells grown via MOCVD technique Xinliang Chen, Xu Yang, JianJun Zhang, Congbo Yan, Xinhua Geng, Ying Zhao, Xiaodan Zhang Nankai University, China
3-P-37	Influence of Substrate temperature on sputtered ZnO:B films using B₂H₆ as doping source Yang Liu, Qian Huang, Dekun Zhang, Ying Zhao, Xiaodan Zhang Nankai University, China

3-P-38	III-VI compounds as novel buffer layer structure in the GaAs on Si system Crisóforo Morales, Nobuaki Kojima, Yoshio Ohshita, Masafumi Yamaguchi <i>Toyota Technological Institute, Japan</i>
3-P-39	Light scattering from microscopic structure and its role on enhanced haze factor Hyeongsik Park, S. M. Iftiqar, Minbum Kim, JunHee Jung, Juyeon Janga, Junsin Yi <i>Sungkyunkwan University, Republic of Korea</i>
3-P-40	Impacts of low process temperatures on properties of co-evaporated CIGS photovoltaic devices Chia-Hua Huang, Chun-Ping Lin <i>National Dong Hwa University, Taiwan</i>
3-P-41	Development and scale-up of high efficiency Cu(In,Ga)Se₂ thin film modules Baosheng Sang <i>HelioVolt Corporation, USA</i>
3-P-42	Effect of CdCl₂ Treatment on Substrate CdTe PV Device Yiteng Jin, Chuan Lin, Wusheng Xu, Qianqian Xin, Limin Wang, Minglong Zhang Zhaoping Wu, Youhao Yang, Dalong Zhong, Qunjian Huang, Bas Korevaar <i>GE Global Research Center (China Technology Center), China</i> <i>GE Global Research Center, USA</i>
3-P-43	Investigation on MoO_x as back contact buffer layers for CdTe/CdS solar cell Limin Wang, Chuan Lin, Wusheng Xu, Qianqian Xin, Yiteng Jin, Minglong Zhang Zhaoping Wu, Youhao Yang, Dalong Zhong, Qunjian Huang, Bas Korevaar <i>GE Global Research Center (China Technology Center), China</i> <i>GE Global Research Center, USA</i>
3-P-44	Low temperature device characteristics of Cu(In,Ga)Se₂ solar cell studied by numerical modeling Yiming Liu, Wei Liu, Yun Sun <i>Nankai University, China</i>
3-P-45	Research on Mo back contact for Cu(In,Ga)Se₂ solar cell on polyimide substrate Jingjing He, Wei Liu, Zhiguo Li, Anjun Han, Yun Sun <i>Nankai University, China</i>
3-P-46	Influence of Ga grading on CIGS film solar cell deposited on flexible polyimide substrate Zhiguo Li, Wei Liu, Jingjing He, Zuliang Li, Long Cheng, Yun Sun <i>Nankai University, China</i>
3-P-47	Investigation of Ohmic contact to p-type Cu₂ZnSnS₄ thin film Long Bo, Cheng Shuying <i>Fuzhou University, China</i>
3-P-48	Preparation and characterization of ZnO:Al films by sol–gel method for solar cells Qian Zhao, Xueqing Xu, Gang Xu <i>Chinese Academy of Sciences(CAS), China</i>
3-P-49	Solution–processed, earth-abundant and non-toxic Cu₂ZnSnS₄ and Cu₂SnS₃ films for solar cells Tapas Chaudhuri, Devendra Tiwari <i>Charotar University of Science and Technology, India</i>

3-P-50	Cu₂ZnSnS₄ thin film solar cell fabricated with sulfurized sol-gel precursors Zhenghua Su, Lianbo Zhao, Fangyang Liu, Yanqing Lai, Jie Li, Yexiang Liu <i>Central South University, China</i>
3-P-51	Research Pulsed Laser Deposition Prepared CZTSe Thin Film Characteristics Wen-Shiang Tsai, Ching-Hsiang Chiu, Tung-Tung Chen, Horng-Show Koo, Chi-Hwa Cheng <i>Minghsin University of Science and Technology, Taiwan</i>
3-P-52	Microstructural characterization of CZTSe thin films by selenization of sputtered CuZnSn metallic precursors Cherng-Yuh Su ¹ , Kuang-Hsiang Liao ¹ , Horng-Show Koo ² 1. <i>National Taipei University of Technology, Taiwan</i> 2. <i>Minghsin University of Science and Technology, Taiwan</i>
3-P-53	Effect of the sputtering power on the cell performance in the ZnS/CIGS solar cells Dong Hyeop Shin ¹ , Ji Hye Kim ¹ , Young Min Shin ¹ , Kyung Hoon Yoon ² , Essam A. Al-Ammar ³ , Byung Tae Ahn ¹ 1. <i>Korea Advanced Institute of Science and Technology, Republic of Korea</i> 2. <i>Korea Institute of Energy Research, Republic of Korea</i> 3. <i>King Saud University, Saudi Arabia</i>
3-P-54	Improved back contact of CdTe thin film solar cells by double wet etching process Seungju Chun, Seunghun Lee, Donghwan Kim <i>Korea University, Republic of Korea</i>
3-P-55	Characterization and synthesis of Cu₂ZnSnS₄ thin film for solar cell using sputtering Kwang Soo Lim, Ji Boem Yoo <i>Sungkyunkwan University, Republic of Korea</i>
3-P-56	Characterization of selenized Cu₂ZnSnS₄ thin films for high quality Cu₂ZnSn(S_xSe_{1-x})₄ thin films fabrication by vacuum process Seong Man Yu, Arun.R.Khalkar, Ji-Beom Yoo <i>Sungkyunkwan University, Republic of Korea</i>
3-P-57	Characterization of Cu(In,Ga)Se₂ by two wavelength excited photoluminescence spectroscopy Amit Gupta ¹ , Takeaki Sakurai ¹ , Norimu Hiraoka ¹ , Akimasa Yamada ² , Shigeru Niki ² , Katsuhiro Akimoto ¹ 1. <i>University of Tsukuba, Japan</i> 2. <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i>
3-P-58	The effects for the deposition time of Cu₂ZnSnSe₄ thin films grown on Mo coated soda lime glass substrates grown by pulsed laser deposition. Jong-Seong Bae ^{1*} , Mi Rang Byeon ^{1,2} , Jong Pil Kim ¹ , Tae Eun Hong ¹ , Jong Sung Jin ¹ , Euh Duck Jeong ¹ , Yang Do Kim ² , Sungkyun Park ² , Won Tae Oh ³ 1. <i>Korea Basic Science Institute, Republic of Korea</i> 2. <i>Pusan National University, Republic of Korea</i> 3. <i>Dong-Eui University, Republic of Korea</i>
3-P-59	Study of semiconductor nitrides thin films for photovoltaic (PV) applications G. Contreras-Puente ¹ , O. de Melo ^{1,2} , M. López-López ¹ , F. de Moure Flores ¹ , L.A. Hernández-Hernández ¹ , J. Aguilar-Hernández ¹ , E. Hernández-Cruz ¹ , G. Santana-Rodríguez ³ , R. Mendoza-Pérez ⁴ , A. Escamilla-Esquivel ¹ , L. Zamora ⁵ 1. <i>IPN, México</i> 2. <i>Universidad de la Habana, Cuba</i>

	3. UNAM, México 4. Universidad Autónoma de la Ciudad de Mexico, Mexico 5. Universidad Veracruzana, Mexico
3-P-60	Kesterite $\text{Cu}_2\text{ZnSnS}_4(\text{CZTS})/\text{Cu}_2\text{ZnSnSe}_4(\text{CZTSe})$ thin-film solar cells - progress and prospect Horng-Shou Kuo, Ting-Wei Kuo Minghsin University of Science and Technology, Taiwan
3-P-61	Fabrication of $\text{Cu}_2\text{ZnSnS}_2$ nanowire arrays using electroplating with nanohole template Chonge Wang ¹ , Yoshinori Tanaka ¹ , Toshifumi Terui ² , Shukichi Tanaka ² , Tomohiro Shimizu ¹ , Shoso Shingubara ¹ 1. Kansai University, Japan 2. National Institute of Information and Communications Technology (NICT), Japan
3-P-62	The application of down-shifting material in solar cells Leliang Li, Jun Zheng, Yuhua Zuo, Buwen Cheng, Qiming Wang Chinese Academy of Sciences(CAS), China
3-P-63	The impurity photovoltaic effect in band-gap graded solar cells: A numerical investigation Yinghui Sun, Pingxiong Yang, Junhao Chu East China Normal University, China
3-P-64	Characterization of $\text{Cu}(\text{In}, \text{Ga})\text{Se}_2$ thin-film solar cells with variable Se-flux using cracker Soo-Jeong Park ^{1,2} , Dae-Hyung Cho ¹ , Ju-Hee Kim ^{1,2} , You-Suk Cho ³ , Jong-Man Yoon ³ , Yong-Duck Chung ^{1,2} 1. Electronics and Telecommunications Research Institute, Republic of Korea 2. University of Science and Technology, Republic of Korea 3. JMON co., Ltd, Republic of Korea
AREA 4: Advanced Solar Cells: New Concepts, Materials and Structures (16:00-18:00, Thursday, Nov. 08, 2012)	
4-P-01	Optical and carrier transport properties of c-Si/conductive Poly(ethylene dioxythiophene):Poly(styrene sulfonate)(PEDOT:PSS) heterojunctions Zeguo Tang, Ishwor Khatri, Ryo Ishikawa, Keiji Ueno, Hajime Shirai Saitama University, Japan
4-P-02	Electrospray deposition of poly(3-hexylthiophene)(P3HT) and phenyl-C_{61}-butyric acid methyl ester (PCBM) films for thin-film solar cells Taiga Hiate, Kyouhei Watanabe, Keiji Ueno, Hajime Shirai Saitama University, Japan
4-P-03	Influence of ZnO doping WO_3 working electrode films on photovoltaic characteristics of dye-sensitized solar cells Yi-An Chen, Yi-Kuei Yu, Shao-Hong Ho, Horng-Shou Kuo Minghsin University of Science and Technology, Taiwan
4-P-04	Optical properties of silicon nanowire arrays themselves prepared with metal assisted chemical etching Yuya Watanabe ¹ , Shinya Kato ¹ , Yasuyoshi Kurokawa ^{1,2} , Akira Yamada ¹ , Yoshimi Ohta ³ , Yusuke Niwa ³ , Masaki Hirota ³ 1. Tokyo Institute of Technology, Japan 2. JST, Japan 3. Nissan Research Center, Japan

4-P-05	The dependences between the particle size of PbS quantum dot and the exciton absorption edge Yanyan Gao ¹ , Xiaoping Zou ¹ , Zhe Sun ¹ , Zongbo Huang ¹ , Xiaofeng Wu ² 1. <i>Beijing Information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-06	Lawson cypress leaf-like ZnO hierarchical nanostructures by self-assembly Chuan Zhao ¹ , Xiaoping Zou ¹ , Xueming Lv ¹ , Xiangmin Meng ² 1. <i>Beijing Information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-07	ZnO thin film prepared by two-step method for dye-sensitized solar cell application Chuan Zhao ¹ , Xiaoping Zou ¹ , Cuiliu Wei ¹ , Xiangmin Meng ² 1. <i>Beijing Information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-08	The application of ZnO nanorods prepared by hydrothermal method in the quantum dots sensitized solar cells ShengHe ¹ , Xiaoping Zou ¹ , Zhe Sun ¹ , Gongqing Teng ¹ , Linhua Hu ² 1. <i>Beijing Information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-09	The influence of precursor solution's concentration on the double-layer ZnO structure and solar cell's performance ShengHe ¹ , Xiaoping Zou ¹ , Zhe Sun ¹ , Gongqing Teng ¹ , Linhua Hu ² 1. <i>Beijing Information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-10	Affect of post-nitrogen-doping of TiO₂ nanoparticle film photo-anode on performance of dye-sensitized solar cells HQ Zhou, XP Zou, GQ Yang, GQ Teng <i>Beijing information Science and Technology University, China</i>
4-P-11	Affect of post-nitrogen-doping of ZnO columnar films photo-anode on performance of dye-sensitized solar cells HQ Zhou, XP Zou, GQ Yang, GQ Teng <i>Beijing information Science and Technology University, China</i>
4-P-12	Application of ZnO nanostructure by hydrothermal growth in quantum dot sensitized solar cells BL Zhang ¹ , XP Zou ^{1,2} , XM Lv ¹ , GQ Yang ¹ , CL Wei ¹ , Z Sun ¹ , ZB Huang ¹ , HQ Zhou ¹ , LH Hu ² , J Zhu ² , XF Wu ² 1. <i>Beijing information Science and Technology University, China</i> 2. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-13	TiCl₄ pretreatment and electrodeposition time investigations of ZnO photoelectrodes preparation for dye sensitized solar cells Yan Liu, Xiaoping Zou, Cuiliu Wei, Zongbo Huang, Xiangmin Meng <i>Beijing information Science and Technology University, China</i>
4-P-14	Electrodeposition combination with hydrothermal preparation of ZnO films and their application in dye-sensitized Solar Cell Yan Liu, Xiaoping Zou, Cuiliu Wei, Zongbo Huang, Xiangmin Meng <i>Beijing information Science and Technology University, China</i>
4-P-15	Deposition of zinc oxide photo electrode using plasma enhanced chemical vapor deposition for dye sensitized solar cells Su Young Lee, Sang Ho Kim

	<i>Korea University of Technology and Education, Republic of Korea</i>
4-P-16	Crystalline germanium films grown by solid phase crystallization on crystalline silicon substrates T. Yamaguchi, A. Suzuki, M. Isomura <i>Tokai University, Japan</i>
4-P-17	High-pressure water vapor treatment for poly-crystalline silicon germanium thin films Hikaru Murano, Takeru Sagisaka and Masao Isomura <i>Tokai University, Japan</i>
4-P-18	Photovoltaic characterization of dye-sensitized solar cells based on Cu₂O-doped ZnO Kuo-Hung Wen, Chun-Ruei Huang, Horng-Show Koo, Yi-An Chen, Chung-Chen Young <i>Minghsin University of Science and Technology, Taiwan</i>
4-P-19	Influence of TiO₂-doped Nb₂O₅ working electrode films on photovoltaic characteristics of dye-sensitized solar cells Pei-Yu Huang, Jia-Yu Chang, Chen-Hsien Wu, Han- Xuan Cai, Horng-Show Koo <i>Minghsin University of Science and Technology, Taiwan</i>
4-P-20	Effective cosensitization of organic dyes for dye-sensitized solar cells based on a near-IR sensitizer Nobuko Onozawa-Komatsuzaki, Takashi Funaki, Kazuyuki Kasuga, Yoko Nakazawa, Kazuhiro Sayama, and Hideki Sugihara <i>National Institute of Advanced Industrial Science and Technology (AIST), Central 5, Japan</i>
4-P-21	High efficiency organic tandem solar cells with GO and ZnO buffer layers Hyeong Pil Kim ¹ , Mi Sun Ryu ² , Abd Rashid bin Mohd Yusoff ¹ , Jin Jang ¹ 1. <i>Kyung Hee University, Republic of Korea</i> 2. <i>TAKOMA Technology Co., Ltd., Republic of Korea</i>
4-P-22	Influence of MoO₃ doping in TiO₂ films on device performance of the dye-sensitized solar cells Yu-Feng Lin, Yi-Kuei Yu, Horng-Show Koo <i>Minghsin University of Science and Technology, Taiwan</i>
4-P-23	Simulation and optimization of the HIT solar cell with AFORS-HET Fengyou Wang, Hongkun Cai, Yuan Wang, Yuquan Zhong, Yannan Li, Dexian Zhang <i>Nankai University, China</i>
4-P-24	Effect of scattering layers prepared by large particles on photovoltaic performance of DSSC Dongpo Chen ^{1,2,3} , Caichi Liu ² , Ying Zhao ¹ , Wenjing Wang ³ , Xiaodan Zhang ¹ 1. <i>Nankai University, China</i> 2. <i>HeBei University of Technology, China</i> 3. <i>Chinese Academy of Sciences(CAS), China</i>
4-P-25	Study on efficiency capacity of small SLI lead-acid battery for photovoltaic applications Watchara Pengpiban ¹ , Worrajak Muangja ² , Teerasak Somsak ² 1. <i>King Mongkut's University of Technology Thonburi, Thailand</i> 2. <i>Rajamangala University of Technology Lanna, Thailand</i>
4-P-26	Metal chalcogenide complex-mediated fabrication of Cu₂S films as counter electrode in quantum dot sensitized solar cells Xuechao Yu, Jun Zhu, Yaohong Zhang, Feng Liu, Jian Weng, Linhua Hu, Songyuan Dai <i>Chinese Academy of Sciences(CAS), China</i>

4-P-27	Metal chalcogenide complex-mediated fabrication of Cu₂S films as counter electrode in quantum dot sensitized solar cells Xuechao Yu, Jun Zhu, Yaohong Zhang, Feng Liu, Jian Weng, Linhua Hu, Songyuan Dai <i>Chinese Academy of Sciences(CAS), China</i>
4-P-28	Process development for high-efficiency dye-sensitized solar cells Xiaqin Fang, Songyuan Dai <i>Chinese Academy of Sciences(CAS), China</i>
4-P-29	A realized nano-dipole solar cell Fang Huang, Xiangxin Liu <i>Chinese Academy of Sciences(CAS), China</i>
4-P-30	Chirped distributed bragg reflector for enhancing light absorption in InGaAs/GaAs multiple-quantum-well single-junction solar cells Hassanet Sodabanlu, Shaojun Ma, Yunpeng Wang, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano <i>The University of Tokyo, Japan</i>
4-P-31	Fabrication of ordered bulk heterojunction organic solar cells using electrospray deposition on the nanoimprinted electron donor layer Sung-Eun Park, Kang-min Kim, Se-Hwan Kim, Hang-Eun Joe, Eun-Kyoung Kim, Woo-Chul Kim, Byung-Kwon Min, Jungho Hwang <i>Yonsei University, Republic of Korea</i>
4-P-32	DSCs Performance of (010)-Faceted Anatase TiO₂ Nanocrystals Synthesized from Layered Titanate Nanosheets Changdong Chen, Yong Fan, Shunsuke Nakanishi, Qi Feng <i>Kagawa University, Japan</i>
4-P-33	An investigation on failure modes of dye-sensitized solar cells sealed by the UV cured sealant Po Tsung Hsiao, Jung Pin Chiu, Meng Chin Tsui, Yung Liang Tung <i>Industrial Technology Research Institute, Taiwan</i>
4-P-34	Microcrystalline silicon-germanium solar cell with band-gap multiple-profiled intrinsic layer Yu Cao, Jianjun Zhang, Tianwei Li, Zhenhua Huang, Jun Ma, Jian Ni, Ying Zhao <i>Nankai University, China</i>
4-P-35	Numerical simulation of thin film silicon triple-junction solar cells based on $\mu\text{c-Si}_{1-x}\text{Ge}_x\text{:H}$ Zhenhua Huang, Jianjun Zhang, Jian Ni, Yu Cao, Jun Ma, Xinliang Chen, Xiaodan Zhang, Xinhua Geng, Ying Zhao <i>Nankai University, China</i>
4-P-36	Improving the conversion efficiency of three-dimensional superstrate silicon solar cell based on ZnO nanorod Zhinan Jia ^{1,2} , Yang Liu ¹ , Jun Fan ^{1,2} , Xu Yang ¹ , Huixu Zhao ¹ , Qian Huang ¹ , Xinliang Chen ¹ , Guangcai Wang ¹ , Caichi Liu ² , and Ying Zhao ¹ , Xiaodan Zhang ¹ 1. <i>Nankai University, China</i> 2. <i>Hebei University of Technology, China</i>
4-P-37	A-SiGe:H solar cell and preliminary application in triple-junction solar cells Bofei Liu, Lisha Bai, Jian Ni, Qian Hang, Xu Yang, Huixu Zhao, Changchui wei, Jian sun, Ying Zhao, Xiaodan Zhang, <i>Nankai University, China</i>
4-P-38	Surface modification of indium tin oxide electrode for enhancing stability of organic photovoltaics Eui Jin Lee, Soo Won Heo, Doo Kyung Moon <i>Konkuk University, Republic of Korea</i>
4-P-39	A study on effects of side chain location of low bandgap polymers for photovoltaic application

	Myung Hee Han, Min Hee Choi, Kwan Wook Song, Doo Kyung Moon <i>Konkuk University, Korea</i>
4-P-40	Synthesis and photovoltaic properties of copolymer containing quinacridone moiety in the polymers backbone. Doohun Kim, Jooyoung Lee, Myunghee Han, Hojun Song, Dookyung Moon <i>Konkuk University, Republic of Korea</i>
4-P-41	Characteristics of III-nitride on Si heterostructural photovoltaics grown by PA-MBE C. W. Chang, T. W. Deng, Y. F. Hsu, P. Wadekar, C. Y. Ho, Q. Y. S. Chen, L. W. Tu <i>National Sun Yat-Sen University, Taiwan</i>
4-P-42	Fabrication of Si quantum Dots/SiC multilayers for all-Si solar cells Y. Q. Cao ¹ , S. X. Li ¹ , J. Xu ¹ , Y. J. Rui ¹ , K. J. Chen ¹ , Y. H. Zuo ² , Q. M. Wang ² 1. <i>Nanjing University, China</i> 2. <i>Institute of Semiconductors, China</i>
4-P-43	Demonstration and analysis of a fuel-fired thermophotovoltaic system Chenxue, Zhang meng-yan, Qian zi-qin <i>Shanghai Institute of Space Power Institute, China</i>
4-P-44	Electron recombination of In₂S₃/CuInS₂ sensitized solar cells Xueqing Xu, Fengjiao Mei, Ping An, Qingcui Wan, Chunyan Luan, Gang Xu <i>Chinese Academy of Sciences(CAS), China</i>
4-P-45	Improvement of conversion efficiency for solar cell with metal-oxide-semiconductor diode Takahiro Kobayashi, Naoto Matsuo, Akira Heya <i>University of Hyogo, Japan</i>
4-P-46	Contribution of As source gas to N-H defect formation in GaAsN grown by chemical beam epitaxy Kazuma Ikeda, Makoto Inagaki, Nobuaki Kojima, Yoshio Ohshita, Masafumi Yamaguchi <i>Toyota Technological Institute, Japan</i>
4-P-47	Photovoltaic characteristics of dye-sensitized solar cells based TiO₂-WO₃ photoanode films Jih-Fan Chen ¹ , Horng-Show Koo ^{1,2} , Der-Ray Huang ¹ 1. <i>National Dong Hwa University, Taiwan</i> 2. <i>Minghsin University of Science and Technology, Taiwan</i>
4-P-48	Double acceptors without COOH as conjugating anchor for highly efficient and stable dye-sensitized solar cells Jiangyi Mao, Jianli Hua, He Tian <i>East China University of Science & Technology, China</i>
4-P-49	New bithiazole-based sensitizers with different electron donors for efficient dye-sensitized solar cells Fuling Guo, Jing Li, Jianli Hua <i>East China University of Science and Technology, China</i>
4-P-50	A series of new organic D-A-π-A sensitizers containing pyridal[2,1,3]thiadiazole unit for dye-sensitized solar cells Weijiang Ying, Jing Li, Jianli Hua <i>East China University of Science & Technology, China</i>
4-P-51	Improved performance of all-polymer solar cells by chemically doping technique

	Sungho Nam, Hwajeong Kim, Youngkyoo Kim <i>Kyungpook National University, Republic of Korea</i>
4-P-52	Pt-free counter electrode via electrostatic self-assembly of nickel sulfide nanoparticles for quasi-solid-state dye-sensitized solar cells Won Seok Chi, Harim Jeon, Jin Ah Seo, Joung Woo Han, Hyunju Lee, Jong Hak Kim <i>Yonsei University, Republic of Korea</i>
4-P-53	Controlling the acidity of hole-collecting buffer layers in polymer solar cells Hwajeong Kim, Sungho Nam, Youngkyoo Kim <i>Kyungpook National University, Republic of Korea</i>
4-P-54	A novel D-A-π-A organic sensitizer containing diketopyrrolopyrrole unit with branched alkyl chain for highly efficient and stable dye-sensitized solar cells Sanyin Qu ^{1,2} , Chuanjiang Qin ¹ , Ashraful Islam ¹ , Yongzhen Wu ² , Weihong Zhu ² , Jianli Hua ² , He Tian ² , Liyuan Han ¹ 1. <i>National Institute for Materials Science, Japan</i> 2. <i>East China University of Science and Technology, China</i>
AREA 5: Components of PV System (16:00-18:00, Wednesday, Nov. 07, 2012)	
5-P-01	Feasibility study of a new module concept: BUSBARLESS (BBL) cells and modules Kengo Nakano, Sun Li-yuan, Li Junyong, Yang Taofen, Liu Jun, Zhong Xiaoyan, Du Jiabin, Wan Yuepeng <i>LDK Solar Hi-Technology Co., LTD, China</i>
5-P-02	Reliability and safety evaluation of polymeric materials used in photovoltaic modules Ethan Wang ¹ , Hsinjin Edwin Yang ² , Sunny Chi ¹ , Jerry Yen ¹ , Carl Wang ¹ , Ivan Chou ³ 1. <i>Underwriters Laboratories Taiwan Co., Ltd., Taiwan</i> 2. <i>Underwriters Laboratories Inc., USA</i> 3. <i>DeSolar Co. Ltd, Taiwan</i>
5-P-03	Diagnostic methods for thin-film silicon solar modules Zoltán Berenyi ¹ , Ferenc Tancziko ¹ , Tibor Suta ¹ , Luc Feitknecht ² , Arvind Shah ³ 1. <i>Greensolar Equipment Manufacturing Ltd, Gyömrői út 128, 1103 Budapest, Hungary</i> 2. <i>goMicromorph GmbH, Switzerland</i> 3. <i>Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
5-P-04	Preparation of antireflective SiO₂ films on glass via sol-gel process Yao Chen, Jianhui Guo, Ruijiang Hong <i>Sun Yat-Sen University, China</i>
5-P-05	Testing of thin-film silicon modules: Typical problems, analysis and methods for improvement Martin Berov ¹ , Zoltán Berenyi ² , Janez Krc ³ , Yannick Samuel Riesen ⁴ , Nicolas Wyrsh ⁴ , Arvind Shah ⁴ 1. <i>Solarpro PV Module Production, Bulgaria</i> 2. <i>Greensolar Equipment Manufacturing Ltd, Hungary</i> 3. <i>University of Ljubljana, Slovenia</i> 4. <i>Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
5-P-06	Decrease of efficiency and FF of an early-type concentrator PV module in long-term field test

	Shinichiro Oke, Hirotaka Motoda, Keishi Yamane, Yoshishige Kemmoku, Kenji Araki <i>Tsuyama National College of Technology, Japan</i>
5-P-07	Investigation into broken metal fingers in PV modules after mechanical load and thermal cycling tests Pooja Chaturvedi, Bram Hoex, Timothy M. Walsh <i>National University of Singapore(NUS), Singapore</i>
5-P-08	Cell to module loss study of conventional c-Si cells Dong Hou, Bona He, Shuangyan Xu <i>Applied Materials, Inc., China</i>
5-P-09	Back contact cell to module loss study with flexible circuit backsheet Dong Hou ¹ , Yong Shen ¹ , Shuangyan Xu ¹ , William R Bottenberg ² 1. <i>Applied Materials, Inc., China</i> 2. <i>Applied Materials Inc., USA</i>
5-P-10	Optimization of the Cell-to-Module (CTM) conversion loss by using the PV module materials with the improved optical properties Un-Il Baek, Indeok Chung, In-Sik Moon, Ohjune Kwon, Keyman Bae, Seungmin Shin, Sungyong Shin, Won-jae Lee, Eun-Chel Cho <i>Hyundai Heavy Industries, Co., Ltd., Republic of Korea</i>
5-P-11	Cell-to-Module (CTM) conversion loss analysis by cell parameter mismatch effect Indeok Chung, Un-il Baek, Won-jae Lee, Ohjune Kwon, Keyman Bae, Jin-Ho Ahn, Seungmin Shin, Sungyong Shin, Eun-Chel Cho, In-Sik Moon <i>Hyundai Heavy Industries, Co., Ltd., Republic of Korea</i>
5-P-12	A failure detection method of photovoltaic system without measured irradiation data Takashi OOZEKI, Takumi TAKASHIMA <i>National Institute of Advanced Industrial Science and Technology, Japan</i>
5-P-13	C-Si solar cells without front and rear busbars using NICE module encapsulation process Lefillastre Paul ¹ , Dupuis Julien ² , Nichiporuk Oleksiy ² , Einhaus Roland ² 1. <i>CEA/INES LMPV, France</i> 2. <i>APOLLON SOLAR, France</i>
5-P-14	Status and improvement of traceability chain for PV modules measurement in Thailand Yaowanee Sangpongsanot, Dhirayut Chenvidhya, Chamnan Limsakul, Ballang Muenpinij, Manit Seapan, Tanokkorn Chenvidhya, Chaya Jivacate <i>King Mongkut's University of Technology Thonburi, Thailand</i>
5-P-15	Daylight luminescence for photovoltaic system testing Livi Stoicescu ¹ , Michael Reuter ² , Jürgen H. Werner ^{1,2} 1. <i>University of Stuttgart, Germany</i> 2. <i>Steinbeis Center Photovoltaics, Germany</i>
5-P-16	An advanced dielectric-TCO tandem filter in TPV system Yang hui-ying, Chenxue, Zhang meng-yan, Qian zi-qin <i>Shanghai Institute of Space Power Institute, China</i>
5-P-17	Optimized design of light simulator by using dual Fresnel lens Der-Ray Huang, Ji-Fan Chne <i>National Dong Hwa University, Taiwan</i>

5-P-18	Effect of sun radiation on the photovoltaic efficiency of solar cell module on fixed and tracking systems Der-Ray Huang, Huan-Sheng Zeng ,Chia-Hua Huang <i>National Dong Hwa University, Taiwan</i>
AREA 6: PV System (16:00-18:00, Wednesday, Nov. 07, 2012)	
6-P-01	Precise indoor characterization of CPV cells considering wavelength-dependent spatial uniformity under concentration Daisuke Nishi, Takashi Ueda, Misaki Ishitsuka, Yoshihiro Hishikawa <i>National Institute of Advanced Science and Technology (AIST), Japan</i>
6-P-02	Installation guidepost of concentrator photovoltaic system using scattering ratio and global solar irradiance Tsuyoshi Suetō ¹ , Yasuyuki Ota ¹ , Hirokazu Nagai ² , Kenji Araki ² , Kensuke Nishioka ¹ 1. <i>University of Miyazaki, Japan</i> 2. <i>Daido Steel Co., Ltd., Japan</i>
6-P-03	Simulation method for CPV module under outdoor operation Naoki Sawano ¹ , Yasuyuki Ota ¹ , Hirokazu Nagai ² , Kenji Araki ² , Kensuke Nishioka ¹ 1. <i>University of Miyazaki, Japan</i> 2. <i>Daido Steel Co., Ltd., Japan</i>
6-P-04	Trends in photovoltaic applications - the latest survey results on PV markets and policies from the IEA PVPS Programme Greg Watt ¹ , Izumi Kaizuka ² , Pius Hüsler ³ , Roland Bründlinger ⁴ (on behalf of Task 1 of the IEA PVPS Programme) 1. <i>Australian PV Association, Australia</i> 2. <i>RTS Corporation, Japan</i> 3. <i>Nova Energie, Switzerland</i> 4. <i>Austrian Institute of Technology, Australia</i>
6-P-05	Solar spectrum prediction based on ground-based atmospheric measurements Yanqun Xue, Jun Hashimoto, Kenji Otani <i>National Institute of Advanced Industrial Science and Technology, Japan</i>
6-P-06	An apply MPPT PSO algorithm within partially shaded condition for highland area at Thailand Worrajak Muangjai, Teerasak Somsak, Kosol Oranpiroj, Jutturit Thongpron <i>Rajamangala University of Technology Lanna(RMUTL), Thailand</i>
6-P-07	Thermal aspects of Sphehar® modules in different building integration mode Simon Boddaert ¹ , Chaly Gay ¹ , Kenichi Taira ² , Josuke Nakata ² 1. <i>CSTB, France</i> 2. <i>Kyosemi Corporation, Japan</i>
6-P-08	Fault detection experiments in PV string by TDR method Hiroyuki Okumura ¹ , Takumi Takashima ² , Takumi Hasebe ¹ , Masataka Kinoshita ¹ , Masanori Sawada ¹ , Toshiyuki Yamaguchi ³ 1. <i>Hanwa Electronics Ind. Co. Ltd., Japan</i> 2. <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i> 3. <i>Wakayama National College of Technology, Japan</i>
6-P-09	Financing of solar PV lighting systems: indian experience

	Sunil Kumar Sharma, Gaddipati Prasad, Ahmer Raza <i>Ministry of New and Renewable Energy, India</i>
6-P-10	Estimation of global tilt irradiance and output energy using meteorological data and contour maps of photovoltaic module performance Shota Yoshida, Seiya Ueno, Naoya Kataoka, Hidyuki Takakura, Takashi Minemoto <i>Ritsumeikan University, Japan</i>
6-P-11	The photovoltaic efficiency of cylindrical CIGS solar cell module improved by the reflection effect Der-Ray Huang, Yan-Jang Jiang, Kai-Khih Kan <i>National Dong Hwa University, Taiwan</i>
6-P-12	Quantitative evaluation of self-shading loss in pedestal and carousel trackerHCPV plant Toshikazu Ijiri, Noboru Yamada <i>Nagaoka University of Technology, Japan</i>