



PVSEC-35

35th International Photovoltaic Science and
Engineering Conference

November 10-15, 2024 **Numazu (Mt. Fuji), Japan**



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	Sun. 10 Nov.	Mon. 11 Nov.						Tue. 12 Nov.							
	401	Convention Hall A	Hall B	301 302	401	402	407	Convention Hall A	Hall B	301 302	401	402	407	Multi purpose Hall	
9:00			5-1	5-2	3-1	2-1	1-2	Plenary (1,1,3)						Onsite Exhibition	
10:30			Break								Break				
11:00	Tutorial		5-1	1-2	3-2	CC-2	CC-3		5-1	1-1 2-2	5-2	CC-3	1-2		Poster 3-1 4-2 CC2
12:30			Lunch Break								Lunch Break				
	Lunch Break		Lunch Break								Lunch Break				
14:00	Tutorial	Opening Ceremony						5-1	4-2	3-1	2-1	1-3	Poster 3-2 CC1 CC3		
15:30				Break											
16:00				5-1	4-3	3-2	CC-2	4-1	IEA-PVPS WS	Poster 5-2					
17:30															
17:40								5-1	3-2 CC1						
18:00		Welcome Reception													
19:10															

	Wed. 13 Nov.								Thu. 14 Nov.						Fri. 15 Nov.		
	Convention Hall A	Hall B	301 302	401	402	407	Civic Salon	Multi purpose Hall	Hall B	301 302	401	402	407	Multi purpose Hall	Convention Hall A		
9:00	Plenary (3,5,CC-1)							Poster only viewing						Onsite Exhibition	Plenary (2,2,4)		
10:30										CC-1	4-2	3-1	2-2		5-2	Poster 5-1 1-2/1-3 4-1	Break
11:00		CC-1	1-1	3-1	5-1	4-3				CC-1	2-2	3-2	4-1		1-2	Poster 5-1 1-1 4-3	Plenary (4,4)
12:30		Lunch Break					WinPV luncheon				Lunch Break					Closing Ceremony	
14:00										5-1	Asian Nations WS	3-2	4-2		1-1	Poster 2-1 2-2	
15:30																	
16:00										5-1		5-2	4-1		2-1		
17:30																	
17:40																	
18:00		Banquet															
19:10																	

Technical Area

Area1: PV in Sustainable Energy System

- 1-1 Policy, Market, Finance and Deployment
- 1-2 Grid Integration and Energy Management
- 1-3 Green Energy Carriers and Storage

Area3: Wafer-based Silicon Photovoltaics

- 3-1 Materials, Processes, Fundamentals
- 3-2 Cells and Modules

Area5: Perovskite and Emerging Photovoltaics

- 5-1 Perovskite Photovoltaics
- 5-2 Emerging Materials and New Concepts

Area2: System Engineering and Field Performance

- 2-1 Integrated PV and Advanced Applications of Photovoltaics
- 2-2 Field Performance of Photovoltaic Systems

Area4: Thin-film Photovoltaics and Modules

- 4-1 Organic and Inorganic Photovoltaics
- 4-2 Compound Thin-film Photovoltaics
- 4-3 III-V High-efficiency Devices

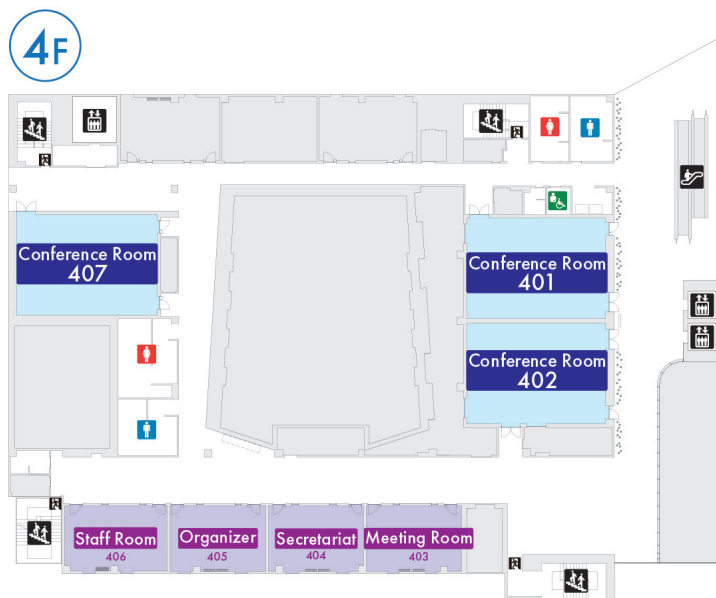
Cross Cutting Areas

- CC-1 Perovskite Tandems
- CC-2 Artificial Intelligence in PV Development
- CC-3 Solar to X; Sciences, Materials and Devices

Convention Numazu



Kiramesse Numazu



Please answer the questionnaire on the website.



PVSEC-35 is supported by the Japan Tourism Agency. The necessary condition for the support is the satisfaction survey of the conference participants.

When you complete the survey, please show us a completed response screen at the tourism booth on the 1st floor of Plaza Verde. The first 250 participants will receive a pen and eraser from the Shizuoka Prefecture Eastern Regional Convention Bureau.



Akira YAMADA
Institute of Science Tokyo

Message from the General Chair

On behalf of the Organizing Committee, I would like to invite you to attend the 35th International Photovoltaic Science and Engineering Conference (PVSEC-35), to be held in Numazu, Japan, during November 10 -15, 2024. PVSEC-35 will be the largest and most comprehensive PV conference in the Asia-Pacific region in 2024.

PVSEC-35 will provide an excellent platform for the world's photovoltaic scientists and engineers to present and share the latest developments in solar PV technologies. I am also planning two satellite events: the IEA PVPS Workshop (12 November) and the 4th Asian Nations Joint Workshop on Photovoltaics (14 November).

The conference will be held in Numazu, a city in Japan located at the foot of Mount Fuji and on the Pacific Ocean, so you can enjoy both mountain and sea views. In addition, the people of Numazu will welcome us and I hope that PVSEC-35 will be a very valuable and hospitable conference for all of us.

We look forward to welcoming you to PVSEC-35.



Yuzuru UEDA
Tokyo Univ. Science

Message from the Program Chair

On behalf of the Program Committee, I would like to welcome you to the 35th International Photovoltaic Science and Engineering Conference. This conference accepted papers from all the areas relevant to photovoltaic science and technology such as fundamental physics and chemistry, cell and module technologies, characterization techniques, system integrations, grid integration, energy management, policy and market issues, and so on.

The program is composed with the 5 areas + cross cutting areas. “Area1: PV in Sustainable Energy System” is covering the future energy systems including PV as a variable renewable energy and storage technology including batteries and Solar to X technologies. “Area2: System Engineering and Field Performance” covers various kinds of integrated PV technologies. “Area3: Wafer-based Silicon Photovoltaics”, “Area4: Thin-film Photovoltaics and Modules”, and “Area5: Perovskite and Emerging Photovoltaics” include not only materials and devices but also module and system level research. Furthermore, in this edition of PVSEC, cross cutting areas will provide special occasions to discuss about the cutting-edge PV technologies such as Perovskite Tandems, Artificial Intelligence in PV Development and Solar to Hydrogen Materials and Devices.

PVSEC-35 will provide unique and variable opportunities to interact with the researchers in the wide area of PV development.

Awards

PVSEC Award (PVSEC-35)

The person who has been devoting oneself to the progresses of Photovoltaic Science and Engineering for many years, belonging to PVSEC Society in principle. The recipient is selected by the Award Committee based on nominations.

The PVSEC Award (PVSEC-35, 2024) will be presented to:



Prof. Noritaka Usami

For his outstanding contributions to pioneering studies for advancing the efficiency of crystalline silicon solar cells through multiscale materials research from bulk crystal growth to atomic interface control.

Prof. Noritaka Usami graduated from the University of Tokyo in 1991 and earned his Doctor of Engineering degree from the same institution in 1998. He served as a research associate at the Research Center for Advanced Science and Technology at the University of Tokyo from 1994 to 2000 before assuming the role of an associate

professor at the Institute for Materials Research at Tohoku University. Since 2013, he has been a professor at the Graduate School of Engineering at Nagoya University. In addition to his academic roles, he was a Senior Science and Technology Policy Fellow at the Cabinet Office, Government of Japan, from 2018 to 2020. As of 2024, he also holds the position of vice presidential advisor at Nagoya University.

His research has focused on improving the efficiency of crystalline silicon solar cells through fundamental materials research across various scales. This includes research on bulk crystal growth, sub-micron-scale processing technology of crystal surfaces, and atomic-scale heterointerface control. His contributions include the development of a cost-effective production method for quasi-monocrystalline ingots utilizing functional defects, photon management technology on thin silicon wafer surfaces, and the realization of high passivation performance of carrier selective contact. Furthermore, he has been at the forefront of research in materials and process informatics.

His outstanding contributions have been recognized with several prestigious awards, including the Best Paper Award at PVSEC (2009), the SiliconPV Award (2018), JSAP Fellowship (2021), and the Commendation for Science and Technology by MEXT Japan (2022). His research interests encompass the study of various silicon-based materials through multiscale materials science and their applications in photovoltaic, photonic, and electronic fields as well as new materials development research methods.

Awards

PVSEC Special Award (PVSEC-35)

The person or group who has been contributing a great deal in any one of the following PV fields;

- growth of photovoltaic industrial technology
- public policymaking, international activities, international standardization
- human resource development, educational activities, dissemination activities
- DEI (diversity, equity and inclusion).

The recipient is selected by the Award Committee based on the nominations.

The PVSEC Special Award (PVSEC-35, 2024) will be presented to:



Mr. Akito Yoshii

For his outstanding contributions to growth of photovoltaic industrial technology.

Mr. Akito Yoshii graduated from the Department of Industrial Chemistry, College of Industrial Technology, Nihon University and joined NAMICS Corporation (then Hokuriku Toryou Co., Ltd.) in 1980. He engaged in the development of internal

electrode materials for multi-layer ceramic capacitors (MLCC) as well as related business development. Starting in the late 1990s, he has been engaged in the development of electrode materials for photovoltaic cell applications as a part of NAMICS' strategy to develop eco-conscious commercial materials. His work includes research aimed at increasing the reliability of photovoltaic cells through the industrial-chemistry based evaluations of Ag diffusion to glass frits and the evaluation of reliability affected by an interfacial structure, through structural analysis of an interface between a Si substrate and an Ag electrode of a photovoltaic cell. He was in charge of the development of an Ag paste applicable for heterojunction (HJC) using a resin curing technology, one of the essential technologies NAMICS owns, and successfully developed a paste with the industry-leading low resistance by leveraging a low-temperature fusion phenomenon enabled at 200 degrees Celsius or lower. He has also engaged in other technology developments such as the reduction of Ag content through changing the composition design from the traditional Ag 100% to a composition with base metals. He assumed the position of the Director of the Technical R&D Division in 2009 and additionally Corporate Director in 2019, and has been continuously supervising the Technical R&D Division.

Awards

Hamakawa Award (PVSEC-35)

The Hamakawa Award is named in honor of Professor Yoshihiro Hamakawa, a founder of the photovoltaic community in Japan and the Asia/Pacific PV Conference (PVSEC). The award recognizes scientists and engineers who have made outstanding research and technological accomplishment, and creativity of PV energy conversion. The recipient is selected by the Award Committee based on the nominations.

The Hamakawa Award (PVSEC-35, 2024) will be presented to:



Prof. Atsushi Wakamiya

For his outstanding contributions to pioneering studies on perovskite solar cells.

Prof. Atsushi Wakamiya graduated from Kyoto University in 1998 and received Ph.D from Kyoto University in 2003. He started his academic career at Nagoya University as an assistant professor in 2003. In 2010,

he moved to Kyoto University as an associate professor and was promoted to full professor in 2018. Since 2023, he is also deputy executive vice-president for evaluation and research promotion of Kyoto University.

His scientific research contributed to the advancement of perovskite solar cells. In 2014, he developed and commercialized the key purified precursor materials of PbI_2 for metal halide perovskite semiconductors, enabling the fabrication of efficient perovskite solar cells with high reproducibility over the world. He also elucidated the fundamental properties of perovskite semiconductors and the mechanism of power generation in solar cells. He proposed unique molecular design concepts for charge-collecting materials and surface passivation of perovskite layers. Based on these materials and technologies, the high efficiency and stability of solar cells and modules were realized.

He is a project leader of the Green Innovation Program (NEDO) and JST-Mirai Program, and a co-founder and a director (Chief Scientific Officer, CSO) of “EneCoat Technologies, Co. Ltd.”, a startup company for the production of perovskite solar modules.

He has received several awards: The Chemical Society of Japan Award for Creative Work (2020), Commendation for Science and Technology by MEXT Japan: Award for Science and Technology Research Category (2022), etc. His research interests include materials chemistry and perovskite photovoltaics.

Social Programs

Welcome Reception

Date & Time: 18:00-20:00, Monday, Nov. 11, 2024

Venue: Multipurpose Hall (1F), Plaza Verde, Numazu

All participants are invited.

Light meals and beverages (alcohol & soft drinks) will be served.

Evening cafe "Shohei" for students

Date & Time: 19:10-21:00, Tuesday, Nov. 12, 2024

Venue: Foyer (3F), Plaza Verde, Numazu

Light meals and beverages (alcohol & soft drinks) will be served.

Registration is closed because we have reached full capacity.

Excursion

Date: Nov. 13, 2024

Course 1: Mishima Sky Walk & Nirayama Reverberatory Furnaces (World heritage)

Meeting point: Registration desk (1F), Plaza Verde, Numazu

Meeting time: 12:30 (after the sessions)

Itinerary:

12:45 Plaza Verde

13:00 Ryugu Kaisen Market (Seafood Shabu-Shabu Lunch)

※Possibility of seating in a Japanese-style tatami room.

You may be asked to take off your shoes.

14:30 Mishima Sky Walk

15:45 Nirayama Reverberatory Furnaces

17:45 River Side Hotel (Banquet venue)

18:00 Plaza Verde

Course 2: Izu Panorama Park & Numazu Deep Sea Aquarium

Meeting point: Registration desk (1F), Plaza Verde, Numazu

Meeting time: 14:00 (after the WinPV luncheon)

Itinerary:

14:15 Plaza Verde

15:00 Izu Panorama Park

16:15 Numazu Port (Tasting a variety of foods while walking around)
& Numazu Deep Sea Aquarium

17:45 River Side Hotel (Banquet venue)

18:00 Plaza Verde

Banquet

Date & Time: 18:15-20:30, Wednesday, Nov. 13th, 2024

Venue: River Side Hotel Numazu

<https://www.numazu-rs-hotel.com/english/>

Style: Seating

All seats are sold out.

Co-organizers, Co-sponsors, Supporting Organizations

(This list is no particular order)

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The Institute of Electrical Engineers of Japan (IEEJ)

Co-sponsors

The Japan Society of Applied Physics (JSAP)

The Institute of Electronics, Information and Communication Engineers (IEICE)

The Japan Society for Aeronautical and Space Sciences (JSASS)

The Chemical Society of Japan (CSJ)

The Electrochemical Society of Japan (ECSJ)

JAPAN SOLAR ENERGY SOCIETY (JSES)

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Ministry of Education, Culture, Sports, Science and Technology (MEXT)

New Energy and Industrial Technology Development Organization (NEDO)

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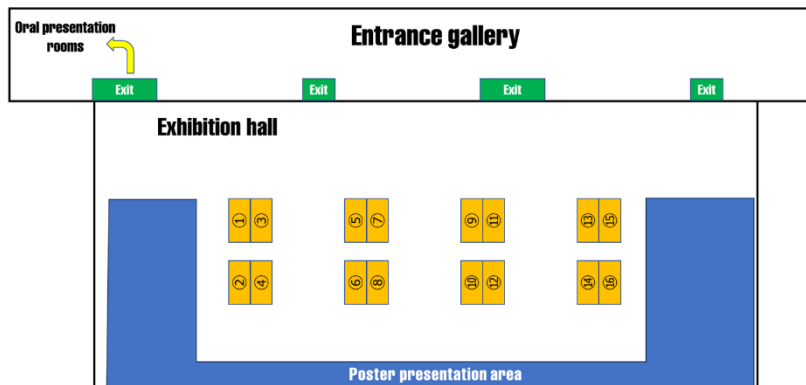
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L. L. Kazmerski (-)
Sarah Kurtz (Univ. California Merced)
William N. Shafarman (IEC, Univ. Delaware)

Secretariat

Kimiko Furukawa (J-PVS)

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Yuzuru Ueda (Tokyo Univ. Science, Japan)

Vice Chair

Noritaka Usami (Nagoya Univ., Japan)

Atsushi Wakamiya (Kyoto Univ., Japan)

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Co-chair:

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Keiichi Komoto (Mizuho Research & Technologies, Japan)

-- Members

Annick Anctil (Michigan State Univ., USA)

Arnulf Jäger-Waldau (EC, Joint Research Centre)

Fang Lyu (IEE-CAS, China)

Izumi Kaizuka (RTS, Japan)

Koji Matsubara (NEDO, Japan)

Yanson Shen (UNSW, Australia)

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Sub-area Chair:

Masakazu Ito (Univ. Fukui, Japan)

Co-chair:

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-- Members

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Ghjuvan Antone Faggianelli (Univ. Corsica, France)

Ryoichi Hara (Hokkaido Univ., Japan)

Hiroyuki Hatta (CRIEPI, Japan)

Takeyoshi Kato (Nagoya Univ., Japan)

Yusuke Miyamoto (KANDENKO, Japan)

Hideaki Ohtake (AIST, Japan)

Satoshi Takayama (Osaka Prefecture Univ., Japan)

Takayuki Tanabe (MEIDENSHA, Japan)

Shinji Wakao (Waseda Univ., Japan)

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Sub-area Chair:

Koichi Sugibuchi (RTS, Japan)

-- Members

Amarbayar Adiyabat (National Univ. Mongolia, Mongolia)

Jindan Cui (Tokyo Univ. Sci., Japan)

Ryoichi Hara (Hokkaido Univ., Japan)

Hiroyuki Hatta (CRIEPI, Japan)

Takeyoshi Kato (Nagoya Univ., Japan)

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Hideaki Ohtake (AIST, Japan)

Takahiro Takamatsu (AIST, Japan)

Satoshi Takayama (Osaka Prefecture Univ., Japan)

Takayuki Tanabe (MEIDENSHA, Japan)

Shinji Wakao (Waseda Univ., Japan)

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Area Chair:

Kensuke Nishioka (Univ. Miyazaki, Japan)

Co-chair:

N.J.Ekins-Daukes (UNSW Sydney, Australia)

Sub-area 2-1

Sub-area Chair:

Mitsuru Imaizumi (Sanjo City Univ., Japan)

-- Members

Kenji Araki (Univ. Miyazaki, Japan)

Scott McHugo (SolGo, USA)
Tetsuya Nakamura (JAXA, Japan)
Daisuke Sato (NIT Nagaoka College, Japan)
Takeyoshi Sugaya (AIST, Japan)
Tatsuya Takamoto (SHARP, Japan)
Robert Walters (AFRL, USA)

Sub-area 2-2

Sub-area Chair:

Hiromi Tobita (JET, Japan)

-- Members

Seungkyu Ahn (KIER, Korea)
Yasuo Chiba (AIST, Japan)
Yoshihito Eguchi (VENA Energy, Nippon
Renewable Energy, Japan)
Peter Hacke (NREL, USA)
Edward Hsi (Swiss RE, Singapore)
Tetsuyuki Ishii (CRIEPI, Japan)
Tomonao Kobayashi (Gifu Univ., Japan)
Takashi Minemoto (Ritsumeikan Univ., Japan)
Christos Monokroussos (TUV Rheinland,
Germany)
Yasuyuki Ota (Univ. Miyazaki, Japan)
Takeshi Tayagaki (AIST, Japan)

Area 3

Area Chair:

Noritaka Usami (Nagoya Univ., Japan)

Co-chair:

Hae Seok Lee (Korea Univ., Korea)
Zhengxin Liu (SIMIT, China)

Sub-area 3-1

Sub-area Chair:

Keisuke Ohdaira (JAIST, Japan)

-- Members

Rabin Basnet (ANU, Australia)
Kazuhiro Gotoh (Niigata Univ., Japan)

Zahcary Holman (ASU, USA)
Shinya Kato (Nagoya Tech., Japan)
Vamsi Krishna Komarala (IIT Delhi, India)
Kazuo Muramatsu (Namics, Japan)
Nitin Nampalli (BT Imaging, Australia)
Tappei Nishihara (JASRI, Japan)
Marisa di Sabatino (NTNU, Norway)
Martin Schubert (FhISE, Germany)
Hee-eun Song (KIER, Korea)
Xinbo Yang (Soochow Univ., China)
Xuegong Yu (Zhejiang Univ., China)

Sub-area 3-2

Sub-area Chair:

Atsushi Masuda (Niigata Univ., Japan)

-- Members

Daisuke Adachi (KANEKA, Japan)
Xuemei Cheng (Singulus, Germany)
Marwan Dhamrin (Osaka Univ./Toyo
Aluminium, Japan)
Bram Hoex (UNSW, Australia)
Olindo Isabella (TU Delft, The Netherlands)
Yasuaki Ishikawa (AGU, Japan)
Shin Woei Leow (NUS, USA)
Jun Lv (LONGi Solar, China)
Byungul Min (ISFH, Germany)
Hirotu Oowada (Shinetsu Chemical, Japan)
Hitoshi Sai (AIST, Japan)
Kwanyong Seo (UNIST, Korea)
Yasushi Sobajima (Gifu Univ., Japan)
Tomihisa Tachibana (AIST, Japan)
Hiroaki Takahashi (Kyocera, Japan)
Rasit Turan (Middle East Tech. Univ., Turkey)

Area 4

Area Chair:

Itaru Osaka (Hiroshima Univ., Japan)
Yoshitaro Nose (Kyoto Univ., Japan)

Sub-area 4-1

Sub-area Chair:

Yutaka Ie (Osaka Univ., Japan)

Masatoshi Yanagida (NIMS, Japan)

-- Members

Yasuyoshi Kurokawa (Nagoya Univ., Japan)

Tingli Ma (Kyushu Institute of Technology, Japan)

Keisuke Tajima (Riken, Japan)

Sub-area 4-2

Sub-area Chair:

Yoshitaro Nose (Kyoto Univ., Japan)

Shogo Ishizuka (AIST, Japan)

-- Members

Xiaojing Hao (UNSW, Australia)

Yukiko Kamikawa (AIST, Japan)

Junho Kim (Incheon National Univ., Korea)

Takashi Minemoto (Ritsumeikan Univ., Japan)

Takahito Nishimura (Science Tokyo, Japan)

Hitoshi Tomita (Idemitsu, Japan)

Deliang Wang (Univ. Sci. Tech. China, China)

Kenji Yoshino (Univ. Miyazaki, Japan)

Sub-area 4-3

Sub-area Chair:

Ryuji Oshima (AIST, Japan)

Stephen Bremner (UNSW, Australia)

-- Members

David Lackner (FhISE, Germany)

Emily Warren (NREL, USA)

Kentaroh Watanabe (Univ. Tokyo, Japan)

Area 5

Area Chair:

Atsushi Wakamiya (Kyoto Univ., Japan)

Shen Qing (Univ. Electro-Communications,
Japan)

Sub-area 5-1

Sub-area Chair:

Atsushi Wakamiya (Kyoto Univ., Japan)

Takuro Murakami (AIST, Japan)

-- Members

Peter Chen (National Cheng Kung Univ., Taiwan)

Giulia Grancini (Univ. Pavia, Italy)

Tamotsu Horiuchi (EneCoat Technologies,
Japan)

Yasuaki Ishikawa (AGU, Japan)

Pongsakom Kanjanaboos (Mahidol Univ.,
Thailand)

Hao-Wu Lin (National Tsing Hua Univ., Taiwan)

Artem Musiienko (HZB, Germany)

Zhijun Ning (ShanghaiTech Univ., China)

Kazuyuki Nonomura (Univ. Tokyo, Japan)

Akinori Saeki (Osaka Univ., Japan)

Hyunjun Shin (Sungkyunkwan Univ., Korea)

Takeshi Tayagaki (AIST, Japan)

Sub-area 5-2

Sub-area Chair:

Shen Qing (Univ. Electro-Communications,
Japan)

Tooru Tanaka (Saga Univ., Japan)

Yasuhiro Tachibana (RMIT Univ., Australia)

-- Members

Shigeo Asahi (Kobe Univ., Japan)

Shujuan Huang (Macquarie Univ., Australia)

Ryousuke Ishikawa (Tokyo City Univ., Japan)

Wanli Ma (Soochow Univ., Japan)

Takashi Minemoto (Ritsumeikan Univ., Japan)

Richard Murdey (Kyoto Univ., Japan)

Tomah Sogabe (Univ. Electro-Communications.,
Japan)

Cross-cutting areas

Sub-area CC-1

Sub-area Chair:

Ryousuke Ishikawa (Tokyo City Univ., Japan)

Yasuaki Ishikawa (AGU, Japan)

-- Members

Fan Fu (EMPA, Switzerland)

Dong-Won Kang (Chung-Ang Univ., Korea)

Wenzhu Liu (SIMIT, China)

Takuya Matsui (AIST, Japan)

Miyuki Shiokawa (Toshiba, Japan)

Yasuhiro Shirai (NIMS, Japan)

Yiwen Zhang (Shanghai Normal Univ., China)

Sub-area CC-2

Sub-area Chair:

Kentaro Kutsukake (RIKEN, Japan)

-- Members

Takuto Kojima (AIST, Japan)

Hiroaki Kudo (Nagoya Univ., Japan)

Sub-area CC-3

Sub-area Chair:

Katsushi Fujii (RIKEN, Japan)

-- Members

Joel W. Ager (Lawrence Berkeley National Lab., USA)

Jun-Seok Ha (Chonnam National Univ., Korea)

Takayuki Ichikawa (Hiroshima Univ., Japan)

Tatsuoki Kono (Univ. Tokyo, Japan)

Seigo Ito (Hyogo Univ. Japan)

Special Events

Networking Lunch for Women in Photovoltaics

(Civic Salon, 1st Floor, Kiramesse NUMAZU, Plaza Verde, Nov. 13, 12:30-13:30 JST)

Registration fee is charged with pre-registration. The fee includes a lunch box (Regular or Vegetarian), First come first served for 50 seats

Style: Networking lunch with presentation and panel discussion

Onsite participation includes a lunch box (Regular or Vegetarian).

This event would be good opportunity for young women to meet senior female researchers (role models) working in the field of photovoltaics and also good opportunity for all participants for networking.

Agenda

Keynote speech: Dr. Ulrike Jahn (Fraunhofer CSP, Germany)

Panel discussion moderated by Izumi KAIZUKA, RTS Corporation

Panelist:

Dr. Ulrike Jahn (Fraunhofer CSP, Germany)

Prof. Xiaodan Zhang (Nankai Univ., China)

Dr. Yukiko Kamikawa (AIST, Japan)

Dr. Veronica Bermudez Benito (HBKU-QEERI, Qatar)

Satellite Events

IEA PVPS Workshop @ PVSEC-35 Numazu, Japan

[Workshop organizer]: IEA PVPS, NEDO and PVSEC 35

[Date: Tuesday 12th November 2024

[Venue]: Room 407, 4F, Plaza Verde

[Participation Fee]: Free for PVSEC-35 participants

【Details】

14:00-15:30 Session 1: PV market and Sustainability

Co-organized by Task 1 (Strategic PV Analysis & outreach) and Task 12 (PV Sustainability Activities)

- Greetings from IEA PVPS Chair, Daniel Mugnier
- Trends of PV market, Gaëtan Masson, IEA PVPS Task 1/ Becquerel Institute, Belgium
- Overview of Task 12, Garvin Heath, IEA PVPS Task 12/ NREL, USA
- Solar panel recycling technology: from fundamentals to applications Yansong Shen, UNSW, Australia
- PV recycling potential, Keiichi Komoto, Mizuho R&T, Japan
- Discussion

16:00-17:30 Session 2: Extreme Weather Impacts on PV system Reliability

Organized by Task 13 (Reliability and Performance of Photovoltaic Systems)

- Introduction (T13 Activities), Ulrike Jahn, FhG-CSP, Germany
- Snow Impacts, Alexander Granlund, RI.SE, Switzerland
- Soiling Impacts, Leonardo Micheli, Sapienza University Rome, Italy
- Tropical Cyclone Impacts, Laurie Burnham, Sandia National Laboratory, USA
- Structural Damages, Kohta Sato, SPEI, Japan
- Wrap-up, Tadanori Tanahashi, AIST, Japan

17:30-19:00 Session 3: Agrivoltaics Action Group

Co-organized by IEA PVPS APV Action Group, ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development), Japan Community Power Association, Institute for Sustainable Energy Policies (ISEP), and Japan Solar Sharing Federation, Supported by A Japan Fund for Global Environment grant of the Environmental Restoration and Conservation Agency

- Greetings from Tetunari Iida, ISEP
- About the Agrivoltaics Action Group of IEA PVPS, Alessandra Scognamiglio, ENEA, Italy and Jordan Macknick, NREL, USA
- Agrivoltaics in ASEAN Countries
- Agrivoltaics in ASEAN Countries, Thomas Reindl, The Solar Energy Research Institute

of Singapore (SERIS)

- Japanese status, regulatory aspects and issues, Izumi Kaizuka, RTS Corporation
- Practical application of APV for small-scale farmers in Japan applicable to the global south, Kazunori Oda, Agritree Inc.
- Design Optimization of Agri-Photovoltaic Systems in Different Climate Regions, Daisuke Yajima, Miyazaki University
- The point of view of the farmers, Small-scale Agrivoltaics and Carbon Farming in Japan, Masafumi Shigeie, WakuWaku Solar Sharing Farm in Higashi-hirosima
- Wrap-up, Alessandra Scognamiglio, ENEA



4th Asian Nations Joint Workshop on PV

【Organizer】 The Japan Photovoltaic Society (J-PVS)

【Date】 Nov. 14th, 2024

【Venue】 Plaza Verde, 301+302 (3F)

【Registration fee】 Free (only for PVSEC-35 participants)

14:00-14:05	Keisuke Ohdaira (JAIST, Japan)	Welcome address
14:05-14:25	Keisuke Ohdaira (JAIST, Japan)	Current situation of PV in Japan
14:25-14:45	Yibo Wang (CAS, China)	Status and prospects of DC-integrated photovoltaic generation system
14:45-15:05	Donghwan Kim (Korea Univ., Korea)	Recent PV activities in Korea
15:05-15:25	Amornrat Limmanee (NSTDA, Thailand)	Thailand PV Research & Development and Policy Roadmap
15:25-15:40	Break	
15:40-16:00	Rasit Turan (Middle East Technical Univ., Turkey)	PV manufacturing and R&D activities in Turkey
16:00-16:20	Nowshad Amin (American International Univ. Bangladesh, Bangladesh)	Current Status, Challenges and Prospects of Solar PV in Bangladesh's Energy Roadmap
16:20-16:40	Vamsi Krishna Komarala (IIT Delhi, India)	Solar photovoltaics in India: An overview of research and development, industry expansion, obstacles, and future opportunities
16:40-17:00	Thomas Reindl (SERIS, Singapore)	Overview and Outlook of Solar PV in Singapore
17:00-17:05	Yuzuru Ueda (Tokyo Univ. Sci., Japan)	Closing Remarks

Tutorials

Tutorial | Tutorial

📅 Sun. Nov 10, 2024 10:30 AM - 12:45 PM JST | Sun. Nov 10, 2024 1:30 AM - 3:45 AM UTC 🏢 401(4F)

[T1] Tutorials

10:30 AM - 11:30 AM JST | 1:30 AM - 2:30 AM UTC

[T-01]

Fundamental of Solar Cells

Yasuaki Ishikawa (Aoyama Gakuin Univ., Japan)

11:45 AM - 12:45 PM JST | 2:45 AM - 3:45 AM UTC

[T-02]

Solar cell characterization

Takeaki Sakurai (Univ. Tsukuba, Japan)

Tutorial | Tutorial

📅 Sun. Nov 10, 2024 2:00 PM - 6:30 PM JST | Sun. Nov 10, 2024 5:00 AM - 9:30 AM UTC 🏛️ 401(4F)

[T2] Tutorials

2:00 PM - 3:00 PM JST | 5:00 AM - 6:00 AM UTC

[T-03]

Perovskite Solar Cells

Xiaodang Zhang (Nankai Univ., China)

3:15 PM - 4:15 PM JST | 6:15 AM - 7:15 AM UTC

[T-04]

Reliability Issues and Future Prospects of Photovoltaic Modules

Atsushi Masuda (Niigata Univ., Japan)

4:30 PM - 5:30 PM JST | 7:30 AM - 8:30 AM UTC

[T-05]

Electric Vehicle Trends and LCA, Sector Coupling with Photovoltaic Power Generation

Keiichiro Sakurai (AIST, Japan)

5:30 PM - 6:30 PM JST | 8:30 AM - 9:30 AM UTC

[T-06]

Policy and Future of PV

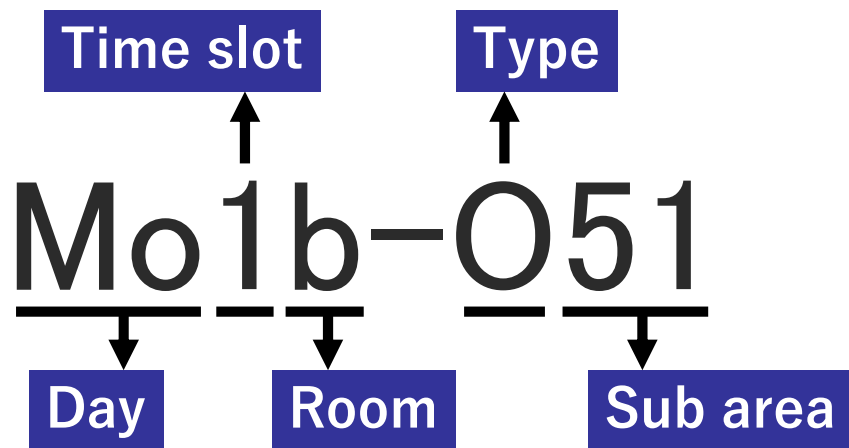
Takashi Oozeki (AIST, Japan)

Technical Program

As of Nov. 10th, 2024

Session Code

L: Plenary session
O: Oral session
P: Poster session



Mo: Monday, Nov. 11
Tu: Tuesday, Nov. 12
We: Wednesday, Nov. 13
Th: Thursday, Nov. 14
Fr: Friday, Nov. 15

a: Hall A
b: Hall B
c: 301+302
d: 401
e: 402
f: 407

Opening | Opening

📅 Mon. Nov 11, 2024 2:00 PM - 2:55 PM JST | Mon. Nov 11, 2024 5:00 AM - 5:55 AM UTC 🏛️ Convention Hall A(1F)

[Mo3a-L] Opening I

Session Chair(s):Yukiko Kamikawa(AIST), Yuzuru Ueda(Tokyo Univ. Science)

2:00 PM - 2:05 PM JST | 5:00 AM - 5:05 AM UTC

[Mo3a-L-01]

Opening Address / Akira Yamada (Science Tokyo) / General Chair of PVSEC -35

2:05 PM - 2:10 PM JST | 5:05 AM - 5:10 AM UTC

[Mo3a-L-02]

Welcome Address (Video Message) / Yasutomo Suzuki, Governor of Shizuoka Prefecture

2:10 PM - 2:15 PM JST | 5:10 AM - 5:15 AM UTC

[Mo3a-L-03]

Welcome Address / Shuichi Yorishige, Mayor of Numazu

2:15 PM - 2:35 PM JST | 5:15 AM - 5:35 AM UTC

[Mo3a-L-04]

Japan's Strategy on Next-Generation Solar Cells

*Masaki Higurashi¹ (1. Agency for Natural Resources and Energy (Japan))

2:35 PM - 2:55 PM JST | 5:35 AM - 5:55 AM UTC

[Mo3a-L-05]

The potential of diamond quantum sensors for efficient energy management based on photovoltaics

*Mutsuko Hatano¹ (1. Institute of Science Tokyo (Japan))

Opening | Opening

📅 Mon. Nov 11, 2024 2:55 PM - 3:55 PM JST | Mon. Nov 11, 2024 5:55 AM - 6:55 AM UTC 🏛️ Convention Hall A(1F)

[Mo3a-A] Award Ceremony

Session Chair: Makoto Konagai (Tokyo City Univ.)

Opening | Opening

📅 Mon. Nov 11, 2024 4:10 PM - 5:30 PM JST | Mon. Nov 11, 2024 7:10 AM - 8:30 AM UTC 🏛️ Convention Hall A(1F)

[Mo4a-L] Opening II

Session Chair(s): Atsushi Wakamiya (Kyoto Univ.), Yuzuru Ueda (Tokyo Univ. Science)

4:10 PM - 4:30 PM JST | 7:10 AM - 7:30 AM UTC

[Mo4a-L-01]

Solar Energy and the Path to Decarbonization in the United States

*Lenny Tinker¹ (1. U.S. Dept of Energy Solar Energy Technologies Office (United States of America))

4:30 PM - 4:50 PM JST | 7:30 AM - 7:50 AM UTC

[Mo4a-L-02]

TBA

*Zhengxin Liu¹ (1. Shanghai Institute of Microsystem & Information Technology, Chinese Academy of Sciences (China))

4:50 PM - 5:10 PM JST | 7:50 AM - 8:10 AM UTC

[Mo4a-L-03]

TBA

*Anis Jouini¹ (1. ECM Greentech (France))

5:10 PM - 5:30 PM JST | 8:10 AM - 8:30 AM UTC

[Mo4a-L-04]

NEDO's Activities for Solar PV

*Atsuyuki Suzuki¹ (1. NEDO (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

📅 Mon. Nov 11, 2024 9:00 AM - 10:30 AM JST | Mon. Nov 11, 2024 12:00 AM - 1:30 AM UTC 🏛️

Convention Hall B(3F)

[Mo1b-O51] Sub area 5-1:Interface engineering of perovskite solar cells

1

Session Chair(s): Artem Musiienko (HZB), Hyunjung Shin (SKKU)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Mo1b-O51-01 (Invited)]

Efficient and stable perovskite solar cells through interface engineering

*Jangwon Seo¹ (1. Korea Advanced Institute of Science and Technology (KAIST) (Korea))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Mo1b-O51-02]

Effect of Additive on the Photovoltaic Performance of Perovskite Solar Cells
-Interface, Grain boundary, and Crystallinity-

*Masatoshi Yanagida¹, Dhruva B. Khadka¹, Yasuhiro Shirai¹, Kenjiro Miyano¹ (1. National Institute for Materials Sciences (NIMS) (Japan))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Mo1b-O51-03]

Sequential Evaporation Process for Fabrication of Fully Vacuum-Processed Perovskite Solar Cells: Effect of HTL on Morphology and Crystallization

*Alexander Diercks¹, Julian Petry¹, Thomas Feeney¹, Roja Singh¹, Hang Hu¹, Ulrich Wilhelm Paetzold¹, Paul Fassl¹ (1. Karlsruhe Institute of Technology (KIT) (Germany))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Mo1b-O51-04]

Regulating Phase Homogeneity by Self-Assembled Molecules for Enhanced Efficiency and Stability of Inverted Perovskite Solar Cells

*Xi Wang^{1,2}, Renjun Guo², Yi Hou^{1,2} (1. Department of Chemical and Biomolecular Engineering, National University of Singapore (Singapore), 2. Solar Energy Research Institute of Singapore (SERIS) (Singapore))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Mo1b-O51-05]

Stabilized heterointerface for high-efficiency and stable p-i-n perovskite solar cells

*Zhen Li¹ (1. University of New South Wales (Australia))

Sub area 5-2: Emerging Materials and New Concepts | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-2: Emerging Materials and New Concepts

🏠 Mon. Nov 11, 2024 9:00 AM - 10:30 AM JST | Mon. Nov 11, 2024 12:00 AM - 1:30 AM UTC 🏠

301+302(3F)

[Mo1c-O52] Sub area 5-2: Quantum Dot Solar Cells

Session Chair(s): Qing Shen (the University of Electro-Communications), Zhi-Long Zhang (South China Univ. of Tech.)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Mo1c-O52-01 (Invited)]

Colloidal Quantum Dot Solar Cells

*Wanli Ma¹ (1. Soochow University (China))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Mo1c-O52-02]

Exploration on Stable PbS Quantum Dot Solar Ink for Photovoltaics Application

*Xintong Zhang¹, Yinglin Wang¹, Chao Wang¹ (1. Northeast Normal University (China))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Mo1c-O52-03]

Quantum Dot Photovoltaic Materials and Devices

*Zeke Liu¹, Guozheng Shi¹ (1. Soochow university (China))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Mo1c-O52-04]

Synergistic Control and Passivation of Interfaces in PbS Quantum Dot Solar Cells

*CHAO DING^{1,2}, Dandan Wang², Shuzi Hayase², Taizo Masuda³, Zhigang Zou⁴, Ruixiang Wang⁵, Qing Shen² (1. Institute of New Energy and Low-Carbon Technology, Sichuan University (China), 2. Faculty of Informatics and Engineering, The University of Electro-Communications (Japan), 3. CN development division, Toyota Motor Corporation (Japan), 4. Eco-Materials and Renewable Energy Research Center (ERERC), Jiangsu Key Laboratory for Nano Technology (China), 5. Beijing Engineering Research Centre of Sustainable Energy and Buildings, Beijing University of Civil Engineering and Architecture (China))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Mo1c-O52-05]

Eco-friendly Solution-processed AgBiS₂ Nanocrystal Solar Cells

*Yongjie Wang¹, Gerasimos Konstantatos^{1,2} (1. ICFO-The Institute of Photonic Sciences (Spain), 2. ICREA-Institució Catalana de Recerca i Estudis Avançats (Spain))

Sub area 3-1: Materials, Processes, Fundamentals | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

🏠 Mon. Nov 11, 2024 9:00 AM - 10:30 AM JST | Mon. Nov 11, 2024 12:00 AM - 1:30 AM UTC 🏠 401(4F)

[Mo1d-O31] Sub area 3-1: Passivating contacts

Session Chair(s):Xinbo Yang(Soochow Univ.), Kazuhiro Gotoh(Niigata Univ.)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Mo1d-O31-01 (Invited)]

Revealing the Properties of Si Passivating Contacts Using Advanced STEM Analysis

*Harvey Guthrey¹ (1. NREL (United States of America))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Mo1d-O31-02]

Nanopinhole-enabled passivated contacts

*Paul Stradins¹, William Nemeth¹, Dirk Steyn^{2,1}, Harvey Guthrey¹, Sumit Agarwal², David L. Young¹ (1. National Renewable Energy Laboratory (United States of America), 2. Colorado School of Mines (United States of America))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Mo1d-O31-03]

Fully transparent hole-selective MoO_x passivating contact enabling 22.5% efficient silicon solar cells

*Gabriel Bartholazzi¹, Mohamed Shehata¹, Christian Samundsett¹, Daniel Macdonald¹, Lachlan Black¹ (1. Australian National University (Australia))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Mo1d-O31-04]

Silicon heterojunction solar cells featuring localized front contacts

*Sebastian Smits¹, Yifeng Zhao¹, Paul Procel Moya¹, Olindo Isabella¹ (1. Delft University of Technology (Netherlands))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Mo1d-O31-05]

A Study on the Passivation Enhancement Mechanism of TiO_x/Si Heterostructure Using Markov Chain Monte Carlo Method

*Yuto Michishita¹, Kazuhiro Gotoh^{1,2,3}, Shohei Fukaya¹, Yasuyoshi Kurokawa¹, Noritaka Usami^{1,4} (1. Nagoya University (Japan), 2. Niigata University (Japan), 3. IRCNT, Niigata University (Japan), 4. Institutes of Innovation for Future Society, Nagoya University (Japan))

Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics | Area2: System Engineering and Field Performance : Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics

📅 Mon. Nov 11, 2024 9:00 AM - 10:30 AM JST | Mon. Nov 11, 2024 12:00 AM - 1:30 AM UTC 🏢 402(4F)

[Mo1e-O21] Sub area 2-1: Advanced PV Devices and Modules

Session Chair(s): Hiroyuki Toyota (ISAS/JAXA), Mitsuru Imaizumi (Sanjo City Univ.)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Mo1e-O21-01 (Invited)]

Realization of Space Qualified III-V Thin-Film Solar Cell Modules

*Hiroshi Yamaguchi¹, Hiroyuki Juso¹, Hidetoshi Washio¹, Tatsuya Takamoto¹, Tetsuya Nakamura², Shusaku Kanaya², Taishi Sumita², Hiroyuki Toyota² (1. Sharp Energy Solutions Corporation (Japan), 2. Japan Aerospace Exploration Agency (Japan))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Mo1e-O21-02]

Highly Efficient Coloured Silicon Solar Cells

*Yuanxun Liao¹, Chengye Jia¹, Yajie Jiang¹ (1. University of New South Wales (Australia))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Mo1e-O21-03]

Evaluation of incident light characteristics of vehicle-integrated photovoltaic devices (VIPV) installed on the roofs and hoods of all types of vehicles

*Shota Matsushita¹, Kenji Araki¹, Yasuyuki Ota¹, Kensuke Nishiohka¹ (1. University of Miyazaki (Japan))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Mo1e-O21-04]

Wave impact load testing of PV modules for floating applications

*Min Hsian Saw¹, Si Liang Heng², Shin Woei Leow¹, Mauro Pravettoni³ (1. National University of Singapore, Solar Energy Research Institute of Singapore (Singapore), 2. National University of Singapore, Engineering Science Programme (Singapore), 3. Technology Innovation Institute (TII), Renewable and Sustainable Energy Research Center (United Arab Emirates))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Mo1e-O21-05]

Outdoor performance of solar to gas system based on Si photovoltaic module

*Yasuyuki Ota¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

Sub area 1-2: Grid Integration and Energy Management | Area1: PV in Sustainable Energy System : Sub area 1-2: Grid Integration and Energy Management

🏠 Mon. Nov 11, 2024 9:00 AM - 10:30 AM JST | Mon. Nov 11, 2024 12:00 AM - 1:30 AM UTC 🏠 407(4F)

[Mo1f-O12] Sub area 1-2: Grid Integration and Energy Management

9:00 AM - 9:15 AM JST | 12:00 AM - 12:15 AM UTC

[Mo1f-O12-01]

Nowcasting of the hourly global horizontal irradiance using deep learning methodology on multimodal data

*Onon Bayasgalan¹, Atsushi Akisawa¹, Amarbayar Adiyabat² (1. Tokyo University of Agriculture and Technology (Japan), 2. National University of Mongolia (Mongolia))

9:15 AM - 9:30 AM JST | 12:15 AM - 12:30 AM UTC

[Mo1f-O12-02]

Solar irradiance Forecasting Using Vision Transformer with 2D Relative Positional Embedding

*Yuto Tanaka¹, Shinji Wakao¹ (1. Waseda University (Japan))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Mo1f-O12-03]

Interval forecasting of solar radiation using non-parametric distribution and interval correction using random forests

*Tomotaka Toda¹, Jindan Cui¹, Yuzuru Ueda¹, Kenji Utsunomiya², Jun Sasaki², Maki Okada², Koji Yamaguchi² (1. Tokyo University of Science (Japan), 2. Japan Weather Association (Japan))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Mo1f-O12-04]

Integration of probabilistic solar forecasting to improve photovoltaic microgrid performance

*Ghjuvan Antone Faggianelli¹, Sarah Ouedraogo¹, Mohammed Asloune¹, Jean-Laurent Duchaud¹, Gilles Notton¹ (1. University of Corsica (France))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Mo1f-O12-05]

Analysis on Hit Rate Changing Trend of Positive/Negative Error Sign of A Day-ahead Forecast of Aggregated PV Power Output

*Miyu Nakamura¹, Chiyori T Urabe¹, Takeyoshi Kato¹ (1. Nagoya university (Japan))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Mo1f-O12-06]

Analysis of GEPS forecast characteristics in case TEPCO area solar irradiation forecast occurs serious error

*Takahiro Takamatsu¹, Shuntaro Nakayama¹, Kou Nakajima¹, Hideaki Ohtake¹, Takashi Oozeki¹, Koji Yamaguchi² (1. National Institute of Advanced Industrial Science and Technology (Japan), 2. Japan Weather Association (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

📅 Mon. Nov 11, 2024 11:00 AM - 12:30 PM JST | Mon. Nov 11, 2024 2:00 AM - 3:30 AM UTC 🏛️
Convention Hall B(3F)

[Mo2b-O51] Sub area 5-1: Interface engineering of perovskite solar cells

2

Session Chair(s): Hyunjung Shin (SKKU), Artem Musiienko (HZB)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Mo2b-O51-01 (Invited)]

Perovskite Interface Geometry and Intra-Crystal Disorder

*Yuanyuan Zhou¹ (1. HKUST (Hong Kong))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Mo2b-O51-02]

Potassium Chloride Passivation for Radio-Frequency-Sputtered SnO₂ to Enhance the Efficiency and Eliminate Hysteresis of Perovskite Solar Cells

*Seok-Hyun Jeong¹, Ji-Seong Hwang¹, Jae-Keun Hwang³, Sang-Won Lee¹, Wonkyu Lee¹, Solhee Lee³, Dowon Pyun¹, Sujin Cho¹, Youngho Choe³, Hae-Seok Lee², Donghwan Kim¹, Yoonmook Kang² (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea), 3. Institute of Energy Technology, Korea University, Republic of Korea (Korea))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Mo2b-O51-03]

Pentafulvalene-Fused Fluorinated Compound Boosts Perovskite Solar Cell Performance

*Kun-Mu Lee¹, Wei-Hao Chiu¹, Yan-Duo Lin (1. Chang Gung University (Chinese Taipei))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Mo2b-O51-04]

Textured Perovskite/Silicon Tandem Solar Cells Achieving Over 30% Efficiency Promoted by 4-Fluorobenzylamine Hydroiodide

Jingjing Liu¹, Biao Shi¹, Qiaojing Xu¹, Yuncheng Li¹, Yuxiang Li¹, Pengfei Liu¹, Zetong Sun¹, Xuejiao Wang¹, Cong Sun¹, Wei Han¹, Diannan Li¹, Sanlong Wang¹, Dekun Zhang¹, Guangwu Li¹, Xiaona Du¹, Ying Zhao¹, *Xiaodan Zhang¹ (1. Nankai University (China))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Mo2b-O51-05]

High-performance bifacial perovskite solar cells enabled by single-walled carbon nanotubes

*Jing Zhang¹, Hui-Ming Cheng^{1,2}, S. Ravi P. Silva¹, Wei Zhang¹ (1. Advanced Technology Institute (ATI), University of Surrey, Guildford, Surrey, UK. (UK), 2. Institute of Technology for Carbon Neutrality, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, 518055, P.R.China. (China))

Sub area 1-2: Grid Integration and Energy Management | Area1: PV in Sustainable Energy System : Sub area 1-2: Grid Integration and Energy Management

🏠 Mon. Nov 11, 2024 11:00 AM - 12:30 PM JST | Mon. Nov 11, 2024 2:00 AM - 3:30 AM UTC 🏠

301+302(3F)

[Mo2c-O12] Sub area 1-2: NEDO Project and Grid Integration

Session Chair(s): Ghjuvan Antone Faggianelli(Univ. of Corsica), Shinji Wakao(Waseda Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Mo2c-O12-01 (Invited)]

NEDO Grid Integration Projects

*Yuka Ogasawara¹ (1. NEDO (New Energy and Industrial Technology Development Organization) (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Mo2c-O12-02]

Challenges and possibilities of a power system evolution in the transition to carbon neutrality in Japan

*Kazuhiko Ogimoto¹, Yumiko Iwafune¹, Masaki Imanaka¹, Kazuto Kataoka¹, Shuhei Segawa², Hitoshi Azuma², Akira Isonaga², Suguru Fukutome² (1. The University of Tokyo (Japan), 2. J-POWER Business Service (Japan))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Mo2c-O12-03]

Control design of grid forming inverter for photovoltaic generation with virtual inertia characteristic

*Junichi ARAI¹, Ryuichi Yokoyama², Takahiko Yamauchi³, Satoshi Miyazaki⁴, Dai Orihara⁵, Jun Hashimoto⁶ (1. Energy and Environment Technology Research Institute (Japan), 2. Energy and Environment Technology Research Institute (Japan), 3. Tokyo Electric Power Company Holdings, Inc. (Japan), 4. Tokyo Electric Power Company Holdings, Inc. (Japan), 5. National Institute of Advanced Industrial Science and Technology (Japan), 6. National Institute of Advanced Industrial Science and Technology (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Mo2c-O12-04]

Day-Ahead plan revision utilizing the intraday market for securing reserve power in PV power plants with batteries

*Yihe Wei¹, Jindan Cui¹, Xue Fang¹, Takashi Oozeki², Yuzuru Ueda¹ (1. Tokyo University of Science (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Mo2c-O12-05]

Coordinated control method of an off-grid system for a data center, PV, and wind power plants

*Ayaka Nakamura¹, Chiyori T. Urabe¹, Takeyoshi Kato¹, Mikimasa Iwata¹ (1. Nagoya University (Japan))

Sub area 3-2: Cells and Modules | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-2: Cells and Modules

🏠 Mon. Nov 11, 2024 11:00 AM - 12:30 PM JST | Mon. Nov 11, 2024 2:00 AM - 3:30 AM UTC 🏠 401(4F)

[Mo2d-O32] Sub area 3-2: TOPCon, back-contact and other high-efficiency silicon solar cells

Session Chair(s):Olindo Isabella(TU Delft), Hitoshi Sai(AIST)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Mo2d-O32-01 (Invited)]

SILICON SOLAR CELL RESEARCH AT KIER AND CENTER FOR ADVANCED SOLAR PV TECHNOLOGY

*Hee-eun Song¹ (1. KIER (Korea))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Mo2d-O32-02]

p-type/*n*-type polysilicon emitter for self-aligned back contact solar cells

Erik Hoffmann¹, Philip Jäger², *Geoffrey Gregory¹, Muhammad Khan¹, Nabeel Khan¹, Thorsten Dullweber², Rolf Brendel^{2,3}, Massimo Centazzo¹ (1. EnPV GmbH (Germany), 2. Institute for Solar Energy Research Hamelin (ISFH) (Germany), 3. Institute for Solid State Physics, Leibniz Univ. (Germany))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Mo2d-O32-03]

Improving the Reliability of TOPCon Technology through Laser-Enhanced Contact Firing

*Xinyuan Wu¹, Xutao Wang¹, Weiguang Yang², Jianjun Nie², Jing Yuan², Muhammad Umair Khan¹, Alison Ciesla¹, Chandany Sen¹, Zhencong Qiao², Bram Hoex¹ (1. University of New South Wales (Australia), 2. Jolywood (Taizhou) Solar Technology Co., Ltd. (China))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Mo2d-O32-04]

High resolution study of thermally grown interfacial oxide thickness during poly-Si passivating contact formation

*Anitta Rose Varghese¹, Rabin Basnet¹, Sieu Pheng Phang¹, Felipe Kermer², Frank Brink², Daniel Macdonald¹ (1. School of Engineering, The Australian National University, Canberra (Australia), 2. Centre for Advanced Microscopy, The Australian National University, Canberra (Australia))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Mo2d-O32-05]

Efficient silicon solar cells with aluminum-doped zinc oxide-based passivating contact

Xinbo Yang Yang¹, *Kun Gao¹ (1. Soochow University (China))

Sub area CC-2: Artificial Intelligence in PV Development | Cross Cutting Areas : Sub area CC-2: Artificial Intelligence in PV Development

🏠 Mon. Nov 11, 2024 11:00 AM - 12:30 PM JST | Mon. Nov 11, 2024 2:00 AM - 3:30 AM UTC 🏠 402(4F)

[Mo2e-Oc2] Sub area CC-2: AI for PV Systems

Session Chair(s): Kentaro Kutsukake (RIKEN), Hideaki Ohtake (AIST)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Mo2e-Oc2-01 (Invited)]

Advancements in Solar Radiation Forecasting using Deep Learning

*Jun Sasaki¹ (1. Japan Weather Association (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Mo2e-Oc2-02]

Machine learning for PV spectral mismatch correction

*Miguel Ángel Sevillano-Bendezú¹, Micaela Rodríguez-Peña¹, José María Ripalda¹ (1. Instituto de Micro y Nanotecnología (IMN-CNM, CSIC) (Spain))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Mo2e-Oc2-03]

Innovative Power Transfer Strategies for Photovoltaic Systems

*Emmanuel Bravin Daniel¹, Arul Franco², Deepthi Tarika³ (1. Stella Mary's College of Engineering (India), 2. University College of Engineering Nagercoil (India), 3. Stella Mary's College of Engineering (India))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Mo2e-Oc2-04]

Intelligent Control Strategy of a Battery Energy Storage for a Climate-Controlled Greenhouse with a High Proportion of Local Renewable Energy

*Akihiro Funaki¹, Jorge Solis¹, David Olsson², Magnus Nilsson² (1. Karlstad University (Sweden), 2. Glava Energy Center (Sweden))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Mo2e-Oc2-05]

TRPL analysis of perovskite by physics-based machine learning on desktop computers

*Hualin Zhan¹, Klaus Weber¹, Kylie Catchpole¹ (1. Australian National University (Australia))

Sub area CC-3: Solar to X; Sciences, Materials and Devices | Cross Cutting Areas : Sub area CC-3: Solar to X; Sciences, Materials and Devices

🏠 Mon. Nov 11, 2024 11:00 AM - 12:30 PM JST | Mon. Nov 11, 2024 2:00 AM - 3:30 AM UTC 🏠 407(4F)

[Mo2f-Oc3] Sub area CC-3: Solar to X (1); Sciences, Materials and Devices

Session Chair(s): Takayuki Ichikawa (Hiroshima Univ.), Takeharu Murakami (RIKEN)

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[Mo2f-Oc3-01]

Photo-enhanced catalytic performances in zinc-air battery using Cu-Sn-Se as the photocathodes.

*You-Chang Hong¹ (1. CHANG-GENG University, Chinese Taipei (Chinese Taipei))

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[Mo2f-Oc3-02]

Natural Rubber Latex Foam with ZnO Photocatalysts for Antibacterial Efficiency

*Kamonthip Singbumrung^{1,4}, Yeampon Nakaramontri², Chotiros Dokkhan³, Pasaree Laokijcharoen³, Surawut Chuangchote^{1,4} (1. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok 10140, Thailand. (Thailand), 2. Sustainable Polymer & Innovative Composites Material Research Group, Department of Chemistry, Faculty of Science, King Mongkut's University Thonburi (Thailand), 3. National Metal and Materials Technology Center (MTEC), National Science and Technology Development Agency (NSTDA), Thailand Science Park (Thailand), 4. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (KMUTT) (Thailand))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Mo2f-Oc3-03]

Comparison between the direct-gap and silicon PV: science and technology

*Paul Stradins¹ (1. National Renewable Energy Laboratory (United States of America))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Mo2f-Oc3-04]

Two-step photon absorption in hematite/silicon photoanode for Z-Scheme water splitting

*Tomah Sogabe^{1,2,3}, Yoshitaka Okada^{1,2} (1. Research Center for Advanced Science and Technology (RCAST), The University of Tokyo (Japan), 2. Graduate School of Engineering, The University of Tokyo (Japan), 3. The University of Electro-communications (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Mo2f-Oc3-05]

Estimating photovoltaic potential considering the shade using a three-dimensional city model

*Taiyo Kaneuchi¹, Ryosuke Atsumi¹, Hideyuki Matsumoto², Hideaki Araki¹ (1. National College of Technology, Nagaoka College (Japan), 2. Tokyo Institute of Technology (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Mo2f-Oc3-06]

FeCoNiCuSn High-entropy Catalysts for Ammonia Oxidation Using a Photovoltaic-Electrolysis Cell System

*Minseo Jeon¹, Chanmin Jo¹, Joon Young Kim^{1,2}, Il-Gu Kim², Gyoung Hwa Jeong¹, Uk Sim^{1,2} (1. Korea Institute of Energy Technology (KENTECH) (Korea), 2. NEEL Science, INC. (Korea))

Sub area 1-1: Policy, Market, Finance and Deployment | Area1: PV in Sustainable Energy System : Sub area 1-1: Policy, Market, Finance and Deployment

📅 Tue. Nov 12, 2024 9:00 AM - 9:30 AM JST | Tue. Nov 12, 2024 12:00 AM - 12:30 AM UTC 🏛️

Convention Hall A(1F)

[Tu1a-L1] Plenary 1

Session Chair(s):Takashi Oozeki(AIST), Yuka Ogasawara(NEDO)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Tu1a-L1-01]

Advances in Understand the Circular Economy for PV: PVPS Task 12 and NREL Research

*Garvin Heath¹ (1. National Renewable Energy Laboratory (United States of America))

Sub area 1-2: Grid Integration and Energy Management | Plenary

📅 Tue. Nov 12, 2024 9:30 AM - 10:00 AM JST | Tue. Nov 12, 2024 12:30 AM - 1:00 AM UTC 🏛️
Convention Hall A(1F)

[Tu1a-L1] Plenary 1

Session Chair(s): Takashi Oozeki(AIST), Yuka Ogasawara(NEDO)

9:30 AM - 10:00 AM JST | 12:30 AM - 1:00 AM UTC

[Tu1a-L1-02]

Redefining the Power System to Achieve Carbon Neutrality

*Hiroshi Okamoto¹ (1. TEPCO Power Grid Inc. (Japan))

Plenary | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

📅 Tue. Nov 12, 2024 10:00 AM - 10:30 AM JST | Tue. Nov 12, 2024 1:00 AM - 1:30 AM UTC 🏛️
Convention Hall A(1F)

[Tu1a-L3] Plenary 3

Session Chair(s): Keisuke Ohdaira(JAIST), Zhengxin Liu(SIMIT)

10:00 AM - 10:30 AM JST | 1:00 AM - 1:30 AM UTC

[Tu1a-L3-01]

[Tentative] Hydrogen-induced defect dynamics in crystalline silicon solar cells

*Mariana Bertoni¹ (1. Arizona State University (United States of America))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

🏠 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏠

Convention Hall B(3F)

[Tu2b-O51] Sub area 5-1: Interface engineering and field testing of perovskite photovoltaics

Session Chair(s): Peter Chen (National Cheng Kung Univ. (NCKU)), Pongsakorn Kanjanaboos (Mahidol Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Tu2b-O51-01 (Invited)]

Unlocking the Photovoltaic Potential of Tin Perovskite Solar Cells and Advancing Accelerated Aging Techniques for Lead Perovskites

*Artem Musiienko¹ (1. Helmholtz-Zentrum Berlin für Materialien und Energie (Germany))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Tu2b-O51-02]

Understanding Energy Level Alignment at Hole Collecting Monolayer/Perovskite Interface Based on Interfacial Electronic Structure of Organic-Inorganic Semiconductor

*Aruto Akatsuka¹, Minh Anh Truong², Atsushi Wakamiya², Gaurav Kapil³, Shuzi Hayase³, Hiroyuki Yoshida^{1,4} (1. Graduate School of Engineering, Chiba University (Japan), 2. Institute for Chemical Research, Kyoto University (Japan), 3. i-PERC, The University of Electro-Communications (Japan), 4. MCRC, Chiba University (Japan))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Tu2b-O51-03]

Outdoor exposure study of Perovskite solar cell modules by MPPT and I-V measurements

*Yoshihiro Hishikawa¹, Kyo Matsuoka¹, Koki Azuma¹, Abdurashid Mavlonov¹, Tomohiko Hara¹, Takayuki Negami¹, Yu Kawano¹, Akinobu Hayakawa², Takashi Minemoto¹ (1. Ritsumeikan University (Japan), 2. Sekisui Chemical Co., Ltd. (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Tu2b-O51-04]

Modulating Defects in Wide Bandgap Tin Perovskite Solar Cells through Molecular Passivation

*Dhruba B. Khadka¹, Yasuhiro Shirai¹, Masatoshi Yanagida¹, Kenjiro Miyano¹ (1. National Institute for Materials Science (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Tu2b-O51-05]

PACT: PV Accelerator for Commercializing Technologies

*Joshua S Stein¹, Laura Schelhas², Bruce King¹, Timothy Silverman², Angelique Montgomery¹, Micheal Deceglie², Michael Owen-Bellini², Sona Ulicna², Nick Irvin², Jack Schall² (1. Sandia National Laboratories (United States of America), 2. National Renewable Energy Laboratory (United States of America))

| Joint Session 1-1 & 2-2

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏛️
301+302(3F)

[Tu2c-Oj1122] Joint Session 1-1 & 2-2: Long-term use and recycling of PV modules

Session Chair(s): Takeshi Tayagaki(AIST), Yansong Shen(UNSW)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Tu2c-Oj1122-01 (Invited)]

Solar farm inspection via large-scale daylight photoluminescence imaging

Thorsten Trupke¹, *Oliver Kunz¹, Juergen W Weber¹ (1. University of New South Wales (Australia))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Tu2c-Oj1122-02]

New Camera Model for Absolute Quantum Efficiency Data from Electroluminescent Measurements on Photovoltaic Modules

*Jürgen H. Werner¹, Georgette Udo², Liviu Stoicescu³ (1. University of Stuttgart (Germany), 2. Research Center Jülich (Germany), 3. Solarzentrum Stuttgart (Germany))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Tu2c-Oj1122-03]

Evaluation of Thermoelectric Performance of Mg₂Si Synthesized Using Silicon Extracted from Waste PV Modules.

*Katsumichi Hanzawa¹, Shinya Kato², Michihiro Kusumoto¹, Kengo Yamanaka², Taisuke Doi³, Yasuyoshi Kurokawa^{1,4}, Noritaka Usami^{1,4,5}, Takashi Itoh¹ (1. Nagoya University (Japan), 2. Nagoya Institute of Technology (Japan), 3. NPC incorporated (Japan), 4. Institutes of Innovation for Future Society (Japan), 5. Institutes of Materials and Systems for Sustainability (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Tu2c-Oj1122-04]

Study on estimation method of remaining service life of used photovoltaic modules

*Kazumi Takano¹, Kenji Arimatsu² (1. ITES (Japan), 2. Tohoku Electric Power (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Tu2c-Oj1122-05]

Experimental study of effectively separating and extracting valuable metal materials from end-of-life PV modules

*Yuting Zhuo¹, Chengsun He¹, Yansong Shen¹ (1. UNSW (Australia))

Sub area 5-2: Emerging Materials and New Concepts | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-2: Emerging Materials and New Concepts

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏢 401(4F)

[Tu2d-O52] Sub area 5-2: Emerging Materials and Novel Technologies

Session Chair(s): Wanli Ma (Soochow University), Xintong Zhang (Northeast Normal University)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Tu2d-O52-01 (Invited)]

Synthesis and Photophysical Properties of Quantum Dots as well as Application to Solar Cells

*Qing Shen¹ (1. The University of Electro-Communications (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Tu2d-O52-02]

Beyond 20% Efficiency Colored PV realized by incorporation of perovskite quantum dots/ ethylene vinyl acetate (EVA) composite

*Minya Zhou¹, Yuanxun Liao¹, Shujuan Huang², Robert Patterson¹, Martin A Green¹, Jessica Yajie Jiang¹ (1. UNSW Sydney (Australia), 2. Macquarie University (Australia))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Tu2d-O52-03]

Thermal stability, structural transition, and photocatalytic properties of π -SnS tetrahedral particles

*Xiangxin Du¹, Isshin Sumiyoshi¹, Yoshitaro Nose¹ (1. Kyoto University (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Tu2d-O52-04]

Wide bandgap kesterite for indoor photovoltaic application with conversion efficiency above 13% under 2700K illumination

Yuancai Gong¹, Alex Jimenez-Arguijo¹, Sergio Giraldo¹, Zacharie Jehl¹, *Edgardo Saucedo¹ (1. Universitat Politècnica de Catalunya (UPC) (Spain))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Tu2d-O52-05]

Characterization of Particle Assisted Solar Concentrators (PASC) with simple structure

*Keita Fujimoto¹, Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan))

Sub area CC-3: Solar to X; Sciences, Materials and Devices | Cross Cutting Areas : Sub area CC-3: Solar to X; Sciences, Materials and Devices

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏢 402(4F)

[Tu2e-Oc3] Sub area CC-3: Solar to X (2); Sciences, Materials and Devices

Session Chair(s):Katsushi Fujii(RIKEN), Tatsuoki Kono(The Univ. of Tokyo)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Tu2e-Oc3-01 (Invited)]

Local environments on Cu electrode surface for selective CO₂ electrolysis

*Miho Yamauchi^{1, 2} (1. Kyushu University (Japan), 2. Tohoku University (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Tu2e-Oc3-02]

Natural Sunlight-Driven CO₂ Hydrogenation into Methanol at Ambient Pressure

Linjia Han¹, Xianhua Bai¹, *Yanhong Luo¹, Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences (China))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Tu2e-Oc3-03]

Photothermal CO₂ hydrogenation to multi carbon product under ambient pressure

*Xianhua Bai¹, Linjia Han¹, Yanhong Luo¹, Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences, China (China))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Tu2e-Oc3-04]

Understanding the CO₂ reduction reactor anolyte flooding problem in polymer electrolyte-(PEM) type reactor through the water transport properties of ion exchange membranes

*Takeharu Murakami¹, Kei Morishita¹, Kazuki Koike^{1,2}, Kentaro Inoue^{1,2}, Takeshi Matsumoto¹, Takayo Ogawa¹, Katsushi Fujii¹, Satoshi Wada¹ (1. RIKEN (Japan), 2. Meiji University (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Tu2e-Oc3-05]

Dynamic process simulation for green ammonia synthesis applying solar energy

*Yasuyuki Hada¹, Ryosuke Atsumi¹, Keigo Matsuda², Hideaki Araki¹ (1. National Institute of Technology, Nagaoka College (Japan), 2. Nagoya University (Japan))

Sub area 1-2: Grid Integration and Energy Management | Area1: PV in Sustainable Energy System : Sub area 1-2: Grid Integration and Energy Management

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏢 407(4F)

[Tu2f-O12] Sub area 1-2: Transmission and Distribution System

Session Chair(s): Takeyoshi Kato(Nagoya Univ.), Takahiro Takamatsu (AIST)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Tu2f-O12-01 (Invited)]

Grid Forming Inverter: Getting Ready for Inverter Dominated Power System

*Aminul Huque¹, Wenzong Wang¹, Deepak Ramasubramanian¹ (1. Electric Power Research Institute (EPRI) (United States of America))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Tu2f-O12-02]

Fair and efficient PV curtailment method in distribution networks and its experiment.

*Francis Maina Itote¹, Ryuto Shigenobu¹, Akiko Takahashi¹, Masakazu Ito¹, Ghjuvan Antone Faggianelli² (1. University of Fukui (Japan), 2. University of Corsica (France))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Tu2f-O12-03]

Reduction of Power Flow Congestion by Grid-scale Storage Battery in Bulk Power System with a Large PV Penetration

*Daiki Kato¹, Yusuke Mori¹, Shinji Wakao¹, Tomohide Yamazaki², Ichiro Toyoshima², Naoya Inuzuka² (1. Waseda University (Japan), 2. Toshiba Energy Systems & Solutions Corporation (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Tu2f-O12-04]

Effect of Output Estimation Errors of Vertical Bifacial Photovoltaic Systems for Required Reserve Margin and Unit Commitment

*Keito Nishida¹, Ryuto Shigenobu¹, Akiko Takahashi¹, Masakazu Ito¹, Kyungsoo Lee² (1. University of Fukui (Japan), 2. Tech University of Korea (Korea))



12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Tu2f-O12-05]

Evaluating the Extensive Economic Impact on Unit Commitment Due to Prediction Errors in Snow-Covered PV Output

*Takuto Komuro¹, Nobuyuki Yamaguchi¹, Yusuke Manabe¹, Hideaki Ohtake² (1. Tokyo University of Science (Japan), 2. National Institute of Advanced Industrial and Science Technology (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

 Tue. Nov 12, 2024 2:00 PM - 3:30 PM JST | Tue. Nov 12, 2024 5:00 AM - 6:30 AM UTC  Convention Hall A(1F)

[Tu3a-O51] Sub area 5-1: Process innovation for perovskite solar cells 1

Session Chair(s): Kazuteru Nonomura (U Tokyo), Atsushi Wakamiya (Kyoto U)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Tu3a-O51-01 (Invited)]

Perovskite Solar Cells: Discovery and Research Directions

*Nam-Gyu Park¹ (1. Sungkyunkwan University (Korea))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Tu3a-O51-02]

Function of SAM on performance of inverted perovskite solar cells

*Takayuki Negami¹, Hiroki Mori¹, Sachin Apparao Pawar¹, Yu Kawano¹, Takashi Minemoto¹ (1. Ritsumeikan University (Japan))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Tu3a-O51-03]

The conversion of MAI-treated sputtered PbI_2 to perovskite films by close spaced sublimation

*Youngmin Kim¹, Wonkyu Lee², Jae-Keun Hwang², Solhee Lee², Dowon Pyun², Ji-Seong Hwang², Jiyeon Nam², Seok-Hyun Jeong², Sujin Cho², Kyunghwan Kim², Sangwon Lee¹, Youngho Choe³, Donghwan Kim², Yoonmook Kang¹, Hae-Seok Lee¹ (1. Energy Environment Policy and Technology, Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 2. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 3. Institute of Energy Technology, Korea University, Republic of Korea (Korea))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Tu3a-O51-04]

Assessing the Influence of Illumination on Ion Conductivity in Perovskite Solar Cells

Andreas Schiller¹, Sandra Jenatsch¹, Nasim Kabir², Firouzeh Ebadi², Miguel Angel Torre Cachafeiro², Mostafa Othman³, Michael Christian Wolff³, Aïcha Hessler-Wyser³, Wolfgang Tress², *Urs Aeberhard¹, Daniele Braga¹, Beat Ruhstaller^{1,2} (1. FLUXiM AG (Switzerland), 2. Institute of Computational Physics, ZHAW (Switzerland), 3. Photovoltaics and Thin-Film Electronics Laboratory (PV-Lab), EPFL (Switzerland))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Tu3a-O51-05]

Fully vacuum processed highly efficient and stable perovskite solar cells for economic viability

*BARKHA TYAGI¹, RAHUL NAMDIR¹, HEON JIN¹, BENJAMIN PUTLAND¹, HENRY SNAITH¹ (1. UNIVERSITY OF OXFORD (UK))

Sub area 4-2: Compound Thin-film Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-2: Compound Thin-film Photovoltaics

📅 Tue. Nov 12, 2024 2:00 PM - 3:30 PM JST | Tue. Nov 12, 2024 5:00 AM - 6:30 AM UTC 🏛️ Convention Hall B(3F)

[Tu3b-O42] Sub area 4-2: Kesterite and emerging materials for thin-film solar cells

Session Chair(s): Daniel Abou-Ras(HZB), Takahito Nishimura(Tokyo Tech.)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Tu3b-O42-01 (Invited)]

Emerging inorganic chalcogenide for solar harvesting devices

*Lydia Helena Wong¹ (1. Nanyang Technological University (Singapore))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Tu3b-O42-02]

Beyond 11% certified efficiency for Cd-free high bandgap $\text{Cu}_2\text{ZnSnS}_4$ solar cells

*Ao Wang^{1,2}, Kaiwen Sun^{1,2}, Jialiang Huang^{1,2}, Martin A Green^{1,2}, Xiaojing Hao^{1,2} (1. Australian Centre for Advanced Photovoltaics (Australia), 2. University of New South Wales (Australia))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Tu3b-O42-03]

Achieving High Efficiency Kesterite Solar Cells Through a Dual Treatment Approach

JunHo Kim^{1,4}, *Namuundari Otgontamir¹, Temujin Enkhbat¹, Enkhjargal Enkhbayar¹, Soomin Song², Seong Yeon Kim³, Tae Ei Hong¹ (1. Department of Physics, Incheon National University (Korea), 2. Photovoltaic Laboratory, Korea Institute of Energy Research (Korea), 3. Research Center for Thin Film Solar Cells, Daegu Gyeongbuk Institute of Science and Technology (Korea), 4. Global Energy Research Center for Carbon Neutrality, Incheon National University (Korea))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Tu3b-O42-04]

The Pathway to >15% Efficiency Emerging Kesterite Solar Cells

*Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences (China))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Tu3b-O42-05]

Inverted superstrate antimony selenide solar cells

*Chen Qian¹, Kaiwen Sun¹, Martin Green¹, Xiaojing Hao¹ (1. University of New South Wales (Australia))

Sub area 3-1: Materials, Processes, Fundamentals | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

Tue. Nov 12, 2024 2:00 PM - 3:30 PM JST | Tue. Nov 12, 2024 5:00 AM - 6:30 AM UTC 301+302(3F)

[Tu3c-O31] Sub area 3-1: Degradation

Session Chair(s): Rabin Basnet(ANU), Shinya Kato(Nitech)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Tu3c-O31-01 (Invited)]

From the Lab to the Field: Decoding Degradation at Cell, Module, and Field Level for SHJ and TOPCon

*Bram Hoex¹, Chandany Sen¹, Muhammad Umair Khan¹, Xinyuan Wu¹, Xutao Wang¹, Haoran Wang¹, Jiexi Fu¹, Zeinab Haydous¹, Shukla Poddar¹, Moonyong Kim¹, Jim Joseph John¹, Phillip Hamer¹ (1. UNSW Sydney (Australia))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Tu3c-O31-02]

The stability mechanism of SHJ solar cells from the perspective of microstructural changes

*Honghua Zhang^{1,2}, Yinuo Zhou^{1,2}, Haodong Chen^{1,2}, Junlin Du¹, Fanying Meng^{1,2}, Zhengxin Liu^{1,2}, Wenzhu Liu^{1,2}, Liping Zhang^{1,2} (1. Shanghai Institute of Microsystem and Information Technology, China (China), 2. University of Chinese Academy of Sciences (China))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Tu3c-O31-03]

Insights into mechanism of UV-induced degradation in silicon heterojunction solar cells

*Lei Yang¹, Zechen Hu¹, Qiyuan He¹, Zunke Liu³, Yuheng Zeng³, Lifei Yang⁴, Xuegong Yu^{1,2}, Deren Yang^{1,2} (1. State Key Lab of Silicon and Advanced Semiconductor Materials and School of Materials Science & Engineering, Zhejiang University (China), 2. Institute of Information and Functional Materials, ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), 3. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences (China), 4. SuZhou GH New Energy Tech. Co., Ltd. (China))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Tu3c-O31-04]

Improvement of Chlorinated Passivation Layers for Silicon Solar Cells under Ultraviolet (UV) Radiation

*Mohamed M. Shehata¹, Daniel H. Macdonald¹, Lachlan E. Black¹ (1. School of Engineering, The Australian National University, Canberra, ACT 2600, Australia. *mohamed.ismael@anu.edu.au (Australia))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Tu3c-O31-05]

Degradation and recovery mechanisms in passivating contacts for crystalline silicon solar cells

*Kaining Ding¹, Alexander Eberst¹, Binbin Xu¹, Karsten Bittkau¹, Andreas Lambertz¹, Uwe Rau¹ (1. Forschungszentrum Jülich GmbH (Germany))

Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics | Area2: System Engineering and Field Performance : Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics

📅 Tue. Nov 12, 2024 2:00 PM - 3:30 PM JST | Tue. Nov 12, 2024 5:00 AM - 6:30 AM UTC 🏢 401(4F)

[Tu3d-O21] Sub area 2-1: Integration Technologies for New PV Systems

Session Chair(s): Kensuke Nishioka(Miyazaki Univ.), N. J. Ekins-Daukes(UNSW)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Tu3d-O21-01 (Invited)]

Development of Lightweight Solar Array Panel for Japan's Lunar Lander SLIM

*Hiroyuki Toyota¹, Shusaku Kanaya¹, Yu Miyazawa¹, Akio Kukita¹, Tetsuya Nakamura¹, Taishi Sumita¹, Seisuke Fukuda¹, Shujiro Sawai¹, Shinichiro Sakai¹, Hiroshi Yamaguchi², Hiroyuki Juso², Hidetoshi Washio², Tatsuya Takamoto² (1. JAXA (Japan), 2. Sharp Energy Solutions Corporation (Japan))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Tu3d-O21-02]

On-orbit Operation of Solar Panels for JAXA's Lunar Lander SLIM

*Shusaku Kanaya¹, Yu Miyazawa¹, Hiroyuki Toyota¹, Tetsuya Nakamura¹, Taishi Sumita¹, Shujiro Sawai¹, Seisuke Fukuda¹, Shin-ichiro Sakai¹ (1. JAXA (Japan))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Tu3d-O21-03]

Characterization of III-V multi-junction solar cells under vacuum and low temperature conditions for design of space concentrator photovoltaic modules

*Daisuke Sato¹, Kyosuke Shimada¹, Shuto Tsuchida¹, Teppei Okumura², Tetsuya Nakamura², Yoshiyuki Murakami², Noboru Yamada¹ (1. Nagaoka University of Technology (Japan), 2. Japan Aerospace Exploration Agency (Japan))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Tu3d-O21-04]

Towards integration of power electronics into crystalline silicon solar cells

David A. van Nijen¹, Miro Zeman¹, Olindo Isabella¹, *Patrizio Manganiello¹ (1. Delft University of Technology (Netherlands))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Tu3d-O21-05]

PV for HAPS (High Altitude Platform): Tensor-Matrix-based modeling and measurement validation

*Kenji Araki Araki¹, Kohei Okada², Naoki Mukai¹, Shota Matsushita¹, Seiichi Kiyama², Yasuyuki Ota¹, Koji Nishiyama², Kensuke Nishioka¹ (1. University of Miyazaki (Japan), 2. Softbank (Japan))

Sub area 1-3: Green Energy Carriers and Storage | Area1: PV in Sustainable Energy System : Sub area 1-3: Green Energy Carriers and Storage

📅 Tue. Nov 12, 2024 2:00 PM - 3:30 PM JST | Tue. Nov 12, 2024 5:00 AM - 6:30 AM UTC 🏢 402(4F)

[Tu3e-O13] Sub area 1-3: Green Energy Carriers and Storage

Session Chair(s):Koichi Sugibuchi(RTS), Cui Jindan(Tokyo University of Science)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Tu3e-O13-01 (Invited)]

Demonstration Operation of Large-Scale Hydrogen Energy System Using Renewable Energy

*Junichi Sato¹, Shingo Tamaru¹, Junsuke Baba¹, Naoki Kotaki¹ (1. Toshiba Energy Systems & Solutions Corporation (Japan))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Tu3e-O13-02]

Global perspectives on seasonal photovoltaic energy yield adjustment with integrated hydrogen storage systems

*Mao Iida¹, Yosuke Kinden¹, Tomoya Kobayashi¹, Hiroyuki Fujiwara¹ (1. Gifu University (Japan))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Tu3e-O13-03]

Comparison of Hydrogen Supply Cost for Electrolyzers
Participating in Reserve Market between Japan and United Kingdom

*Yuta Nakamura¹, Mutsumi Aoki¹ (1. Nagoya Institute of Technology (Japan))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Tu3e-O13-04]

Pumped hydro energy storage for solar power in India

Srushti Jagtap^{2,1}, Juzer Vasi¹, *Anil Kottantharayil¹ (1. Indian Institute of Technology Bombay (India), 2. Pillai College of Engineering (India))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Tu3e-O13-05]

A chemical maximum-power-point tracking system for stabilized solar-fuel production

*Yasuo Matsubara¹, Hinako Kawakami², Yasuhito Kajita², Yasushi Satoh², Yutaka Amao¹ (1. Research Center for Artificial Photosynthesis, Osaka Metropolitan University (Japan), 2. Advanced Technology Development, Iida Group Holdings Co., Ltd. (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

📅 Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 🏛️ Convention Hall A(1F)

[Tu4a-O51] Sub area 5-1: Process innovation for perovskite solar cells 2

Session Chair(s): Pongsakorn Kanjanaboos (Mahidol University), Peter Chen (National Cheng Kung University (NCKU))

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Tu4a-O51-01 (Invited)]

[Tentative] Efficient perovskite solar cells via charge carrier transport modulation and defects passivation

*Jing-Bi You¹ (1. Chinese Academy of Science (China))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Tu4a-O51-02]

Research on Efficient Perovskite Solar Cells based on Novel Charge Transport Layers

*Xin Li¹, Junyou Yang¹ (1. Huazhong University of Science and Technology (China))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Tu4a-O51-03]

Chemical vapour deposition technology for perovskite fabrication

*Yong Li¹, Faiazul Haque¹, Timothy Jones¹, Benjamin Duck¹, Gregory Wilson¹, Noel Duffy¹ (1. CSIRO Energy (Australia))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Tu4a-O51-04]

P3CT-X hole-transport-layer-based inverted perovskite solar cells

*Anjali Chandel¹, Sheng-Hsuing Chang^{1, 2} (1. National Taiwan Ocean University (Taiwan)
2. Chung Yuan Christian University (Taiwan))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Tu4a-O51-05]

Implications of ion conduction for real-world energy yield of perovskite solar cells

*Daniel Walter¹, Viqar Ahmad¹, Li-chun Chang¹, Heping Shen¹, Kylie Catchpole¹, Klaus Weber¹ (1. Australian National University (Australia))

Efficient perovskite solar cells via charge carrier transport modulation and defects passivation

Jingbi You*

Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China

*e-mail address: jyou@semi.ac.cn

Halide perovskite materials own excellent semiconductor properties, which showed great potential in photovoltaic. In this talk, I will talk about our recent work in perovskite solar cells (PSCs). 1) According to introducing a universal passivation strategy in PSCs, to three world record efficiencies (23.3%, 23.7% and 26.0%) has been achieved ; 2) By introducing NiO/SAM bilayer hole transport layer in inverted PSCs, the efficiency of inverted PSCs has been pushed to over than 27%; 3) Combining low temperature growth method of perovskite films and minimodule device architecture design, close to 23% efficiency of minimodule has been fabricated.

Sub area 4-3: III-V High-efficiency Devices | Area4: Thin-film Photovoltaics and Modules : Sub area 4-3: III-V High-efficiency Devices

📅 Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 🏛️ Convention Hall B(3F)

[Tu4b-O43] Sub area 4-3: III-V High-efficiency Multijunction Devices

Session Chair(s):Ryuji Oshima(AIST), Robin Lang (Fh-ISE)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Tu4b-O43-01 (Invited)]

Lowering the cost of III-V Photovoltaic

*John Simon¹ (1. National Renewable Energy Laboratory (United States of America))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Tu4b-O43-02]

Flexible GaInP/GaAs/InGaAs superlattice triple-junction solar cells reach over 34% (AM0) conversion efficiency

*Zhitao Chen¹, Junhua Long¹, Qiangjian Sun¹, Shulong Lu¹ (1. Suzhou Institute of Nano-Tech and Nano-Bionics (China))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Tu4b-O43-03]

Development of wafer-bonded III-V concentrator solar cells with six junctions

*Robin Lang¹, Malte Klitzke¹, Patrick Schygulla¹, Gerald Siefer¹, David Lackner¹, Frank Dimroth¹, Oliver Höhn^{1,2} (1. Fraunhofer ISE (Germany), 2. University of Freiburg (Germany))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Tu4b-O43-04]

Efficiency enhancement of InGaP/GaAs/In_xGa_{1-x}As//In_yGa_{1-y}As four-junction solar cells by improving current matching

*Takashi Shimasaki¹, Kentaroh Watanabe², Hassanet Sodabanlu², Yoshiaki Nakano¹, Masakazu Sugiyama^{1,2} (1. The University of Tokyo (Japan), 2. Research Center for Advanced Science and Technology, the University of Tokyo (Japan))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Tu4b-O43-05]

III-V p-on-n multi-junction solar cells via surface activated bonding technique

*Hassanet Sodabanlu¹, Depu Ma², Kentaroh Watanabe¹, Yoshiaki Nakano², Masakazu Sugiyama^{1,2} (1. Research Center for Advanced Science and Technology, the University of Tokyo (Japan), 2. School of Engineering, the University of Tokyo (Japan))

Sub area 3-2: Cells and Modules | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-2: Cells and Modules

Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 301+302(3F)

[Tu4c-O32] Sub area 3-2: Silicon heterojunction solar cells

Session Chair(s):Bram Hoex(UNSW), Tomihisa Tachibana(AIST)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Tu4c-O32-01 (Invited)]

Industrial-Scale Deposition of Nanocrystalline Silicon Oxide for 26.4%-Efficient Silicon Heterojunction Solar Cells with Copper Electrodes

Kun Gao¹, Cao Yu^{2,3}, Alison Lennon⁴, Jian Zhou³, *Xinbo Yang¹ (1. College of Energy, Soochow University (China), 2. Institute of Functional Nano & Soft Materials, Soochow University (China), 3. Suzhou Maxwell Technologies Co., Ltd. (China), 4. School of Photovoltaic and Renewable Energy Engineering, The University of New South Wales (Australia))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Tu4c-O32-02]

Fill Factor Loss Analysis of Silicon Heterojunction Solar Cells: Impact of Contact Resistivity and Recombination Losses

Shrestha Bhattacharya¹, Ashutosh Pandey¹, Shahnawaz Alam¹, Silajit Manna¹, Sourav Sadhukhan¹, Son Pal Singh¹, *Vamsi Krishna Komarala¹ (1. Indian Institute of Technology Delhi (India))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Tu4c-O32-03]

Efficient hole carrier transportation and collection via interface modulation between c-Si and p type nano-crystalline silicon emitter

*Liping Zhang¹, Yinuo Zhou¹, Honghua Zhang¹, Junlin Du¹, Guangyuan Wang¹, Fanying Meng¹, Wenzhu Liu¹, Zhengxin Liu¹ (1. Shanghai Institute of Microsystem and Information Technology (China))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Tu4c-O32-04]

UV-induced Degradation in Silicon Heterojunction Solar Cells: Mechanism and Mitigation Solution by Down-Shifting Encapsulation

*Binbin Xu^{1,2}, Alexander Eberst^{1,2}, Kai Zhang^{1,2}, Yanxin Liu^{1,2}, Sara Alkhereibi^{1,3,4}, Karsten Bittkau¹, Andreas Lambertz¹, Uwe Rau^{1,2}, Kaining Ding¹ (1. IEK-5 Photovoltaics, Forschungszentrum Jülich GmbH (Germany), 2. Jülich-Aachen Research Alliance (JARA-Energy) and Faculty of Electrical Engineering and Information Technology, RWTH Aachen University (Germany), 3. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich GmbH (Germany), 4. Faculty of Mathematics, Computer Science and Natural Sciences, RWTH Aachen University (Germany))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Tu4c-O32-05]

Evaluating SHJ Cell Stability under Accelerated Illuminated Annealing and Field Conditions

*Maysa Sarsour¹, Chukwuka Madumelu¹, Alison Ciesla¹, Martin Green¹, NJ Ekins-Daukes¹, Fiacre Rougieux¹, Jessica Yajie Jiang¹ (1. School of Photovoltaic and Renewable Energy, UNSW (Australia))

Sub area CC-2: Artificial Intelligence in PV Development | Cross Cutting Areas : Sub area CC-2: Artificial Intelligence in PV Development

📅 Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 🏠 401(4F)

[Tu4d-Oc2] Sub area CC-2: AI for Silicon and Perovskite Cells

Session Chair(s): Takuto Kojima(AIST), Hiroaki Kudo(Nagoya Univ.)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Tu4d-Oc2-01 (Invited)]

Recent developments in quality inspection for solar cell production using deep learning techniques

*Matthias Demant¹, Philipp Kunze¹, Alexandra Wörnhör¹, Leslie Kurumundayil¹, Wilkin Wöhler¹, Daniel Burkhardt¹, Julian Behrendt¹, Andreas Fell¹, Jonas Haunschild¹, Johannes Greulich¹, Stefan Rein¹ (1. Fraunhofer ISE (Germany))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Tu4d-Oc2-02]

A material and process acceleration platform for slot-die coated perovskite photovoltaics

*Simon Ternes¹, Maurizio Stefanelli¹, Aldo Di Carlo^{1,2} (1. CHOSE, Centre for Hybrid and Organic Solar Energy, University of Rome "Tor Vergata", Department of Electronic Engineering, Via del Politecnico 1, 00133 Rome, Italy (Italy), 2. ISM-CNR, Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche, via del Fosso del Cavaliere 100, 00133 Rome, Italy (Italy))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Tu4d-Oc2-03]

Machine Learning-Driven Prediction of Ambient-Processed Perovskite Solar Cell Performance Using Dew Point

*Seungtae Lee¹, Dowon Pyun¹, Solhee Lee¹, Jae Keun Hwang¹, Wonkyu Lee¹, Jiyeon Nam¹, Ji-Seong Hwang¹, Seok-Hyun Jeong¹, Sujin Cho¹, Kyunghwan Kim¹, Youngmin Kim², Youngho Choe³, Yoonmook Kang², Hae-Seok Lee², Donghwan Kim¹ (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 3. Institute of Energy Technology, Korea University (Korea))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Tu4d-Oc2-04]

Prediction of lead-free perovskites with enhanced accuracy for photovoltaic applications

*Laxmi Nakka¹, Chandu DS² (1. Nanyang Technological University (Singapore), 2. VIT-AP University (India))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Tu4d-Oc2-05]

Machine learning for finding Pb replacement material for perovskite solar cells

*Galhenage Asha Sewvandi¹, Pradeep KW Abeygunawardhana², H.A.H.M. Wijerathne¹, M.G.M.M. Karunarathna¹ (1. University of Moratuwa (Sri Lanka), 2. Sri Lanka Institute of Information Technology (Sri Lanka))

Sub area 4-1: Organic and Inorganic Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-1: Organic and Inorganic Photovoltaics

Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 402(4F)

[Tu4e-O41] Sub area 4-1: Organic and Inorganic Photovoltaics

Session Chair(s): Yasuyoshi Kurokawa (Nagoya Univ.)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Tu4e-O41-01 (Invited)]

Sustainability evaluations and design considerations for terawatt scale manufacturing of future silicon based tandem technology

*Li Wang¹, Moonyong Kim¹, Sisi Wang¹, Yuchao Zhang¹, Weifei Lian², Catherine Chan¹, Brett Hallam¹ (1. UNSW Sydney (Australia), 2. Zhejiang Winhitech New Energy Co.,Ltd (China))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Tu4e-O41-02]

Diagnostics of p-i-n radial junction silicon solar cells at macro-, micro- and nanoscale to determine electrical parameters.

*Marcin Palewicz¹, Tomasz Piasecki¹, Andrzej Sikora¹, Bartosz Pruchnik¹, Krzysztof Gajewski¹, Martin Foldyna², Muhammad Waseem Ashraf^{2,3}, Teodor Gotszalk¹ (1. Department of Nanometrology at the Faculty of Electronics, Photonics and Microsystems, Wrocław University of Science and Technology, Poland (Poland), 2. Laboratoire de Physique des Interfaces et Couches Minces, CNRS, École Polytechnique, IP Paris, France, (France), 3. Nanophotonic Devices, Istituto Italiano di Tecnologia (IIT), Italy (Italy))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Tu4e-O41-03]

Crystallization of Cat-CVD amorphous silicon films by FLA on seed crystal layers formed by aluminum induced crystallization

*Baitong Li¹, Tu Huynh Thi Cam¹, Keisuke Ohdaira¹ (1. Japan Advanced Institute of Science and Technology (Japan))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Tu4e-O41-04]

Demonstration of photoresponsivity in polycrystalline Ge thin film for bottom cell application in multi-junction solar cells

*Shintaro Maeda¹, Takamitsu Ishiyama¹, Takashi Suemasu¹, Kaoru Toko¹ (1. University of Tsukuba (Japan))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Tu4e-O41-05]

Progress in performance and reliability research on lightweight and flexible thin-film PV foils

*Arno Hendrikus Marie Smets¹, Govind Padmakumar¹, Federica Saitta¹, Peer Sluijs¹, Paula Perez Rodriguez¹, K.P. Sreejith¹, Reinder Boekhof¹, Luana Mazzarella¹, Tom Savenije¹, Thierry de Vrijer², Ravi Vasudevan², Mohammed El Makkaoui², Edward Hamers² (1. Delft University of Technology (Netherlands), 2. HyET Solar NL (Netherlands))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1:
Perovskite Photovoltaics

📅 Tue. Nov 12, 2024 5:40 PM - 7:10 PM JST | Tue. Nov 12, 2024 8:40 AM - 10:10 AM UTC 🏛️ Convention
Hall B(3F)

[Tu5b-O51] Sub area 5-1: Special session of perovskite solar cells

Session Chair(s): Atsushi Wakamiya (Kyoto Univ.), Takuro Murakami (AIST)

5:40 PM - 5:55 PM JST | 8:40 AM - 8:55 AM UTC

[Tu5b-O51-01]

Toward High Performance Perovskite Solar Cells and Modules

*Hiroshi Segawa¹ (1. The University of Tokyo (Japan))

5:55 PM - 6:10 PM JST | 8:55 AM - 9:10 AM UTC

[Tu5b-O51-02]

Materials Development and Process Optimization for the Commercialization of Perovskite Solar Cells

*Takuro Murakami¹ (1. AIST (Japan))

6:10 PM - 6:25 PM JST | 9:10 AM - 9:25 AM UTC

[Tu5b-O51-03]

Impact of water vapor transmission on flexible perovskite solar cell modules through damp heat test

*Takashi Minemoto¹ (1. Ritsumeikan University (Japan))

6:25 PM - 6:40 PM JST | 9:25 AM - 9:40 AM UTC

[Tu5b-O51-04]

Interfacial molecular engineering for high-voltage performing perovskite solar cells

*Tutomu Miyasaka¹ (1. Toin University of Yokohama (Japan))

6:40 PM - 6:55 PM JST | 9:40 AM - 9:55 AM UTC

[Tu5b-O51-05]

Efficient and stable perovskite solar cells and modules

*Zonghao Liu¹ (1. Huazhong University of Science and Technology (China))

6:55 PM - 7:10 PM JST | 9:55 AM - 10:10 AM UTC

[Tu5b-O51-06]

Efficient Perovskite Photovoltaics toward Commercialization

*Atsushi Wakamiya¹ (1. Kyoto University (Japan))

| Joint Session 3-2 & CC-1 : Joint Session 3-2 & CC-1

📅 Tue. Nov 12, 2024 5:40 PM - 6:55 PM JST | Tue. Nov 12, 2024 8:40 AM - 9:55 AM UTC 🏢 301+302(3F)

[Tu5c-Oj32c1] Joint Session 3-2 & CC-1 (perovskite/Si tandem cells)

Session Chair(s): Atsushi Masuda(Niigata Univ.), Ryouzuke Ishikawa(Tokyo City Univ.)

5:40 PM - 6:10 PM JST | 8:40 AM - 9:10 AM UTC

[Tu5c-Oj32c1-01 (Invited)]

Challenges for the upscaling of perovskite/silicon tandem technology

*Solenn BERSON¹, Matthieu MANCEAU¹, Olivier DUPRE¹, Polyxeni TSOULKA¹, Adrien DANIEL¹, Kristell CARRERIC¹, Kilian ALCOCCER¹, Perrine CARROY¹, Helen BRISTOW¹, Sylvain ROUSSEAU¹, Helene LIGNIER¹, Frederic JAY¹, Noella LEMAITRE¹, Malek BENMANSOUR¹ (1. CEA LITEN, INES campus (France))

6:10 PM - 6:40 PM JST | 9:10 AM - 9:40 AM UTC

[Tu5c-Oj32c1-02 (Invited)]

Multi-functional TiO_x Nanolayers for Silicon and Perovskite/Silicon Tandem Solar Cells

*Takuya Matsui¹, Hitoshi Sai¹ (1. AIST (Japan))

6:40 PM - 6:55 PM JST | 9:40 AM - 9:55 AM UTC

[Tu5c-Oj32c1-03]

Titanium Silicide: A Promising Candidate of Recombination Layer for Perovskite/TOPCon Tandem Solar Cells

*Dowon Pyun¹, Dongjin Choi¹, Soohyun Bae², Sang-Won Lee³, Hoyoung Song¹, Seok-Hyun Jeong¹, Solhee Lee¹, Jae-Keun Hwang¹, Sujin Cho¹, Myungji Woo¹, Yerin Lee¹, Kyunghwan Kim¹, Youngmin Kim⁴, Youngho Choe⁵, Yoonmook Kang⁴, Donghwan Kim¹, Hae-Seok Lee⁴ (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Photovoltaic Laboratory, Korea Institute of Energy Research (Korea), 3. SUNCAT Center for Interface Science and Catalysis, Stanford University (United States of America), 4. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 5. Institute of Energy Technology, Korea University (Korea))

Sub area 3-2: Cells and Modules | Plenary

📅 Wed. Nov 13, 2024 9:00 AM - 9:30 AM JST | Wed. Nov 13, 2024 12:00 AM - 12:30 AM UTC 🏛️
Convention Hall A(1F)

[We1a-L3] Plenary 3

Session Chair(s): Atsushi Masuda(Niigata Univ.), Hae Seok Lee(Korea Univ.)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[We1a-L3-01]

High Efficiency Silicon-based PV Technology in LONGi

*Xixiang Xu¹, Miao Yang¹, Xiaoning Ru¹, Hua Wu¹, Feng Ye¹, Shi Yin¹, Chengjian Hong¹, Fuguo Peng¹, Yongcai He¹, Jiang Liu¹, Bo He¹, Yong Liu¹, Chaowei Xue¹, Yichun Wang², Hao Deng², Minghao Qu¹, Junxiong Lu¹, Liang Fang¹ (1. LONGi Central R&D Institute, LONGi Green Energy Technology Co., Ltd (China), 2. LONGi Silicon Wafer BU, LONGi Green Energy Technology Co., Ltd (China))

Plenary | Plenary

📅 Wed. Nov 13, 2024 9:30 AM - 10:00 AM JST | Wed. Nov 13, 2024 12:30 AM - 1:00 AM UTC 🏛️
Convention Hall A(1F)

[We1a-L5] Plenary 5

Session Chair(s): Atsushi Wakamiya (Kyoto Univ.), Qing Shen (The Univ. of Electro-Communications)

9:30 AM - 10:00 AM JST | 12:30 AM - 1:00 AM UTC

[We1a-L5-01]

Towards outdoor operation of perovskite solar cells

*Kai Zhu¹ (1. NREL (United States of America))

Plenary | Plenary

📅 Wed. Nov 13, 2024 10:00 AM - 10:30 AM JST | Wed. Nov 13, 2024 1:00 AM - 1:30 AM UTC 🏛️
Convention Hall A(1F)

[We1a-Lc1] Plenary CC1

Session Chair: Takuya Matsui(AIST), Ryousuke Ishikawa(Tokyo City Univ.)

10:00 AM - 10:30 AM JST | 1:00 AM - 1:30 AM UTC

[We1a-Lc1-01]

Interface engineering for stable and efficient perovskite/silicon tandem photovoltaics

*Stefan De Wolff¹ (1. KAUST (Saudi Arabia))

Sub area CC-1: Perovskite Tandems | Cross Cutting Areas : Sub area CC-1: Perovskite Tandems

📅 Wed. Nov 13, 2024 11:00 AM - 12:30 PM JST | Wed. Nov 13, 2024 2:00 AM - 3:30 AM UTC 🏛️
Convention Hall B(3F)

[We2b-Oc1] Sub area CC-1: Perovskite/Si tandem cells

Session Chair(s): Itaru Raifuku (Aoyama Gakuin Univ.), Ryouyusuke Ishikawa (Tokyo City Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[We2b-Oc1-01 (Invited)]

Narrow Bandgap Mixed Tin–Lead Perovskites for All-Perovskite Tandem Photovoltaics

*Shuaifeng Hu¹, Henry James Snaith¹ (1. University of Oxford (UK))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[We2b-Oc1-02]

Rationalizing Perovskite Crystal Growth on Cz Silicon Wafers for Efficient Tandem Solar Cells

*Qilin Zhou^{1,2}, Yi Hou^{1,2} (1. National University of Singapore (Singapore), 2. Solar Energy Research Institute of Singapore (Singapore))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[We2b-Oc1-03]

Fabrication of bendable perovskite/silicon heterojunction tandem solar cells with spin-coated perovskite films on micro-textured thin silicon substrates

*Kimihiko Saito¹, Kanji Takahashi¹, Hiroataka Shishido¹, Ryouyusuke Ishikawa¹ (1. Tokyo City University (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[We2b-Oc1-04]

Technoeconomic analysis for manufacturing perovskite/silicon tandem modules

*Jacob Cordell¹, Michael Woodhouse¹, Emily Warren¹ (1. National Renewable Energy Laboratory (United States of America))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[We2b-Oc1-05]

Structural and Optoelectronic Analysis on >34% Efficient Perovskite/Silicon Tandem

*Jiang Liu¹, Yongcai He², Lei Ding¹, Hua Zhang², Xiaohong Zhang³, Zhengguo Li², Bo He², Xixiang Xu² (1. College of Energy, Soochow Institute for Energy and Materials Innovations, Soochow University, Suzhou, 215006, China (China), 2. LONGi Central R&D Institute, LONGi Green Energy Technology Co., Ltd., Xi'an, China (China), 3. Institute of Functional Nano & Soft Materials (FUNSOM), Jiangsu Key Laboratory for Carbon-Based Functional Materials & Devices, Soochow University, Suzhou, Jiangsu, 215123, China (China))

Sub area 1-1: Policy, Market, Finance and Deployment | Area1: PV in Sustainable Energy System : Sub area 1-1: Policy, Market, Finance and Deployment

🏠 Wed. Nov 13, 2024 11:00 AM - 12:30 PM JST | Wed. Nov 13, 2024 2:00 AM - 3:30 AM UTC 🏠

301+302(3F)

[We2c-O11] Sub area 1-1: PV market and industry: Current and future

Session Chair(s): Keiichi Komoto (MHRT), Koji Matsubara (NEDO)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[We2c-O11-01 (Invited)]

[Tentative] JPEA Outlook 2050

*Takeaki Masukawa¹ (1. Japan Photovoltaic Energy Association (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[We2c-O11-02]

The Rapid Growing Solar Photovoltaic System Capacity in the European Union

-

How to Optimise Land Use

*Arnulf Jäger-Waldau¹, Georgia Kakoulaki¹, Anatoli Chatziangi¹, Sandor Szabo¹ (1. European Commission (Italy))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[We2c-O11-03]

A Snapshot of the Global PV Market and Industry

Gaëtan Masson¹, Arnulf Jäger-Waldau², *Izumi KAIZUKA³, Johan Lindahl⁴, Jose Donoso⁵, Melodie de l'Epine⁶ (1. IEAPVPS TASK1 (Belgium), 2. European Commission Joint Research Centre (JRC) (Italy), 3. RTS Corporation (Japan), 4. Becquerel Institute Sweden AB (Sweden), 5. UNEF (Spain), 6. Becquerel Institute France (France))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[We2c-O11-04]

Towards sustainable penetration of photovoltaics for carbon neutrality by 2050

*Mitsutoshi Okada¹, Yusuke Kumano¹, Shigeru Niki¹, Naoto Takatsu², Keiichi Komoto², Yuzuru Ueda³ (1. NEDO Technology Strategy Center (Japan), 2. Mizuho Research & Technologies, Ltd. (Japan), 3. Tokyo University of Science (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[We2c-O11-05]

Scale of economic opportunities enabled by disruptive PV technologies

*Billy J Stanbery¹, Michael Woodhouse², Jacob J Cordell², Jao van de Lagemaat² (1. Colorado School of Mines (United States of America), 2. National Renewable Energy Laboratory (United States of America))

Sub area 3-1: Materials, Processes, Fundamentals | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

🏠 Wed. Nov 13, 2024 11:00 AM - 12:30 PM JST | Wed. Nov 13, 2024 2:00 AM - 3:30 AM UTC 🏠 401(4F)

[We2d-O31] Sub area 3-1: Defect engineering

Session Chair(s):Hee-eun Song(KIER), Nobuyuki Matsuki(Kanagawa Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[We2d-O31-01 (Invited)]

Gettering in silicon TOPCon cells and its impact

*AnYao Liu¹, Zhongshu Yang¹, Daniel Macdonald¹ (1. Australian National University (Australia))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[We2d-O31-02]

Very high bulk lifetimes in industrial Czochralski-grown n-type silicon ingots with melt recharging

*Afsaneh Kashizadeh¹, Rabin Basnet¹, Iachlan Black¹, Chang Sun², Qian Jin², Yichun Wang², Daniel MacDonald¹ (1. The Australian National University (Australia), 2. LONGI Green Energy Technology Co (China))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[We2d-O31-03]

Advanced modeling of temperature-dependent phenomena in solar cell manufacturing utilizing the full dynamics of heat-up and cool-down profiles

*Sebastian Roder¹, Jale Schneider¹, Andreas Brand¹, Jan Nekarda¹ (1. Fraunhofer Institute for Solar Energy Systems (ISE) (Germany))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[We2d-O31-04]

Investigating recombination activity of Chromium-Gallium (CrGa) pairs in silicon

*SANJIDA HOSSAIN SABAH¹, Tien T. Le¹, Zhuangyi Zhou², Chang Sun³, Yichun Wang³, Qian Jin³, Fiacre Rougieux², Daniel Macdonald¹, AnYao Liu¹ (1. The Australian National University, Canberra (Australia), 2. The University of New South Wales, Sydney (Australia), 3. LONGI Green Energy Technology Co., Ltd. (China))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[We2d-O31-05]

Super high-rate sputtering of high-quality hydrogenated amorphous silicon passivation layer

*Shasha Li¹, Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

🏠 Wed. Nov 13, 2024 11:00 AM - 12:30 PM JST | Wed. Nov 13, 2024 2:00 AM - 3:30 AM UTC 🏠 402(4F)

[We2e-O51] Sub area 5-1: New materials for perovskite solar cells

Session Chair(s): Akinori Saeki (Osaka Univ.), Atsushi Wakamiya (Kyoto Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[We2e-O51-01 (Invited)]

Functional materials and scalable processes for low-cost perovskite solar cells and radiative cooling films

*Pongsakorn Kanjanaboos^{1,2} (1. School of Materials Science and Innovation, Faculty of Science, Mahidol University (Thailand), 2. Center for Cooling and Energy-saving Materials, Faculty of Science, Mahidol University (Thailand))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[We2e-O51-02]

Compositional and additive engineering of wide-bandgap perovskite toward improved performance and stability

*Ryosuke Nishikubo¹, Yieon Park¹, Akinori Saeki¹ (1. Osaka Univ. (Japan))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[We2e-O51-03]

New self-assembling organic molecule with superior hole transport -dithieno [3,2b:2',3'-d] pyrrole functionalized molecule for highly efficient perovskite solar cells

*Daimiota Takhellambam¹, Alessio Dessì², Matteo Salvi^{2,3}, Luigi Angelo Castriotta¹, Massimo Calamante², Daniele Franchi², Lorenzo Zani², Gianna Reginato², Alessandro Mordini², Aldo Di Carlo^{4,1} (1. University of Rome Tor Vergata (Italy), 2. CNR-ICCOM, Florence (Italy), 3. University of Siena (Italy), 4. ISM-CNR, Rome (Italy))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[We2e-O51-05]

Mitigating Non-Radiative Recombination with Perylene Diimide Derivative for Highly Efficient Indoor Perovskite Photovoltaic Devices

*Byung Gi Kim¹, Jummin Lee¹, Dong Hwan Wang^{1,2} (1. Department of Intelligent Semiconductor Engineering, Chung-Ang University (Korea), 2. School of Integrative Engineering, Chung-Ang University (Korea))

Sub area 4-3: III-V High-efficiency Devices | Area4: Thin-film Photovoltaics and Modules : Sub area 4-3: III-V High-efficiency Devices

📅 Wed. Nov 13, 2024 11:00 AM - 12:30 PM JST | Wed. Nov 13, 2024 2:00 AM - 3:30 AM UTC 🏢 407(4F)

[We2f-O43] Sub area 4-3: III-V High-efficiency Devices and Related Technologies

Session Chair(s): Kentaroh Watanabe (Univ. Tokyo), John Simon (NREL)

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[We2f-O43-01]

High reliability flexible encapsulation technology and modules for GaInP/GaAs/InGaAs thin film solar cells

*Xiaoxu Wu¹, Junhua Long¹, Qiangjian Sun¹, Shulong Lu¹ (1. Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences (China))

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[We2f-O43-02]

Characterization of spalling-released thin film tandem solar cells

*Naoya Miyashita¹, Yasushi Shoji², Takeyoshi Sugaya², Tomah Sogabe¹, Koichi Yamaguchi¹, Yoshitaka Okada³ (1. The University of Electro-Communications (Japan), 2. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 3. RCAST, The University of Tokyo (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[We2f-O43-03]

Formation of thick germanium-on-nothing structures via inductively coupled plasma reactive ion etching

*Wenbo Fan^{1,2}, Ryuji Oshima², Yasushi Shoji², Takeyoshi Sugaya², Shuhei Yagi¹, Hiroyuki Yaguchi¹ (1. Saitama University (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[We2f-O43-04]

Over 30% efficient GaInP indoor light photovoltaic cells fabricated via HVPE for internet-of-things

*Yasushi Shoji¹, Ryuji Oshima¹, Kikuo Makita¹, Akinori Ubukata², Shuuichi Koseki², Takeyoshi Sugaya¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 2. Taiyo Nippon Sanso Corporation (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[We2f-O43-05]

Fabrication of GaAs solar cells using large-scale, vertical flow type, single-chamber hydride vapor phase epitaxy

*Ryuji Oshima¹, Yasushi Shoji¹, Yudai Shimizu², Kikuo Makita¹, Akinori Ubukata², Hiroki Tokunaga², Takeyoshi Sugaya¹ (1. National Institute of Advanced Industrial Science and Technology (Japan), 2. Taiyo Nippon Sanso Corporation (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[We2f-O43-06]

Implementation of GaAsGe ternary alloy in a heterojunction solar cell

Pablo Caño¹, *Miguel Ángel Sevillano-Bendezú², Enrique Navarro², Aitana Cano¹, Iván García¹, Raghavendra Rao Juluri³, Ana M. Sánchez³, Alicia Gonzalo Martín⁴, Yolanda González², José María Ripalda² (1. Instituto de Energía Solar, Universidad Politécnica de Madrid (Spain), 2. Instituto de Micro y Nanotecnología (IMN-CNM, CSIC) (Spain), 3. Department of Physics, University of Warwick (UK), 4. Universidad Carlos III de Madrid (Spain))

Women in PV Luncheon

📅 Wed. Nov 13, 2024 12:30 PM - 1:45 PM JST | Wed. Nov 13, 2024 3:30 AM - 4:45 AM UTC 🏢 408(4F)

[PV] Women in PV Luncheon

Sub area CC-1: Perovskite Tandems | Cross Cutting Areas : Sub area CC-1: Perovskite Tandems

📅 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏛️
Convention Hall B(3F)

[Th1b-Oc1] Sub area CC-1: Perovskite-related tandem technologies

Session Chair(s): Yasuhiro Shirai(NIMS), Yasuaki Ishikawa(Aoyama Gakuin University)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Th1b-Oc1-01 (Invited)]

Unlocking the Potential of Perovskite Solar Cells: from Single-Junction to Tandem

*Yi Hou¹ (1. National University of Singapore (Singapore))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Th1b-Oc1-02]

Halogenated Polycyclic Aromatic Hydrocarbon for Hole Selective Layer/Perovskite Interface Modification and Passivation for Perovskite-Organic Tandem Cells with Record Fill Factor

*Md Arafat Mahmud¹, Jianghui Zheng¹, Jia-Fu Chang³, Guoliang Wang¹, Chwenhaw Liao¹, Md Habibur Rahman², Walia Binte Tarique², Shi Tang⁵, Jueming Bing¹, Zhuofeng Li⁴, Limei Yang⁷, Nina Novikova⁵, Tik Lun Leung¹, Hongjun Chen¹, Jianpeng Yi¹, Runmin Tao¹, Marko Jankovec⁶, Stephen Bremner², Julie Cairney¹, Ashraf Uddin², Hieu Nguyen⁴, Trevor Smith⁵, Stefania Peracchi⁸, Chu-Chen Chueh³, Anita W. Y. Ho-Baillie¹ (1. The University of Sydney (Australia), 2. University of New South Wales (Australia), 3. National Chinese Taipei University (Chinese Taipei), 4. Australian National University (Australia), 5. University of Melbourne (Australia), 6. University of Ljubljana (Slovenia), 7. University Technology Sydney (Australia), 8. Centre for Accelerator Science, Australian Nuclear Science and Technology Organisation (Australia))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Th1b-Oc1-03]

Reliability challenges for encapsulation of perovskite-silicon tandem modules

*Gernot Oreski^{1,2}, Chiara Barretta¹, Petra Christöfl¹, Sem Sals³, Bernd Stannowski⁴, Quiterie Emery⁴, Quentin Jeangros⁵, Marcel Kuehne⁶ (1. Polymer Competence Center Leoben (Austria), 2. Montanuniversität Leoben (Austria), 3. The Compound Company (Netherlands), 4. Helmholtz-Zentrum Berlin für Materialien und Energie (Germany), 5. Centre Suisse d'Electronique et de Microtechnique (Switzerland), 6. Hanwha QCells (Germany))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Th1b-Oc1-04]

Peeling-Off Technique towards Lightweight-Flexible and Bifacial Perovskite/Cu(In,Ga)Se₂ Thin-Film Tandem Solar Cells

*Takahito Nishimura¹, Ryouyuke Ishikawa², Yasuaki Ishikawa³ (1. Tokyo Institute of Technology (Japan), 2. Tokyo City University (Japan), 3. Aoyama Gakuin University (Japan))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Th1b-Oc1-05]

Effect of mobile ions on reverse bias degradation in perovskite-based photovoltaics

*Takeshi Tayagaki¹, Haruka Kobayashi¹, Kohei Yamamoto¹, Takuro N. Murakami¹, Masahiro Yoshita¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

Sub area 4-2: Compound Thin-film Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-2: Compound Thin-film Photovoltaics

📅 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏛️
301+302(3F)

[Th1c-O42] Sub area 4-2: Doping and heterointerfaces for high efficiency

Session Chair(s): Kenji Yoshino (U. Miyazaki), Guillermo Antonio Farias Basulto(HZB)

9:00 AM - 9:15 AM JST | 12:00 AM - 12:15 AM UTC

[Th1c-O42-01]

11.9% efficient Cd-Free $\text{Cu}_2\text{ZnSnS}_4$ solar cells enabled by mitigation of Na interstitial defects

*Xiaojie Yuan¹, Jianjun Li^{1,2}, Jialiang Huang¹, Jialin Cong¹, Lishuang Zhang¹, Karen Privat³, Yin Yao³, Zhou Xu⁴, Robert J. Patterson¹, Guojun He¹, Ao Wang¹, Kaiwen Sun¹, Xin Cui¹, Martin A. Green¹, Xiaojing Hao¹ (1. Australian Centre for Advanced Photovoltaics, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales, Sydney, New South Wales (Australia), 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, 72 Wenhua Road, Shenyang (China), 3. Electron Microscope Unit, Mark Wainwright Analytical Centre, University of New South Wales, Sydney, New South Wales (Australia), 4. Monash Centre for Electron Microscopy, Monash University, Clayton, Victoria (Australia))

9:15 AM - 9:30 AM JST | 12:15 AM - 12:30 AM UTC

[Th1c-O42-02]

Unlocking the potential of Kesterite solar cells with Li-doping and Ag-alloying and perspectives for technology transfer

*Sergio Giraldo¹, Alex Jimenez-Arguijo¹, Yuancai Gong¹, Marcel Placidi¹, Zacharie Jehl Li-Kao¹, Edgardo Saucedo¹ (1. Universitat Politècnica de Catalunya (UPC) (Spain))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Th1c-O42-03]

Exploring grain- and grain boundary-specific oxidation, post-deposition treatment, and buffer layer deposition in $\text{Cu}(\text{In,Ga})\text{Se}_2$ absorbers

*Muhammad Uzair Farooq¹, Christian Kaufmann², Alex Redinger³ (1. University of Luxembourg (Luxembourg), 2. Helmholtz-Zentrum Berlin (Germany), 3. University of Luxembourg (Luxembourg))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Th1c-O42-04]

Extended structural defects and Na doping in epitaxially grown $\text{Cu}(\text{In,Ga})\text{Se}_2$ solar cells

*Daniel Abou-Ras¹, Jiro Nishinaga², Takeyoshi Sugaya², Ulrike Bloeck¹, René Schwiddessen¹, Sinju Thomas¹, Dan R. Wargulski¹, Sebastian Weitz¹, Harvey Guthrey³, Pat Trimby⁴, Aimo Winkelmann⁵, Ava Karami^{6,7}, Oana Cojocaru-Mirédin⁷, Delwin Perera⁸, Vasilios Karanikolas⁸, Karsten Albe⁸, Shogo Ishizuka² (1. Helmholtz-Zentrum Berlin (Germany), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. National Renewable Energy Laboratory (United States of America), 4. Oxford Instruments Nanoanalysis (UK), 5. ST Development GmbH (Germany), 6. RWTH Aachen (Germany), 7. Albert-Ludwigs Universität Freiburg (Germany), 8. TU Darmstadt (Germany))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Th1c-O42-05]

Enhanced bulk and interface quality of high bandgap (Ag,Cu)(In,Ga)S₂ solar cells achieving 960 mV V_{OC} and over 13 % efficiency

*Guojun He¹, Kaiwen Sun¹, Ao Wang¹, Chang Yan², Xiaojing Hao¹ (1. The University of New South Wales (Australia), 2. The Hongkong University of Science and Technology (Guangzhou) (China))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Th1c-O42-06]

Alternative electron selective contact designs in CIGS solar cells

*Sarallah Hamtaei^{1,2,3}, Guy Brammertz^{1,2,3}, Ruben Blomm⁴, Nithin Poonkottil⁴, Sean M Garner⁵, Jolien Dendooven⁴, Bart Vermang^{1,2,3} (1. imec (Belgium), 2. Hasselt University (Belgium), 3. EnergyVille (Belgium), 4. University of Ghent (Belgium), 5. Corning Research and Development Corporation (United States of America))

Sub area 3-1: Materials, Processes, Fundamentals | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

🏠 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏠 401(4F)

[Th1d-O31] Sub area 3-1: Metallization

Session Chair(s):Nitin Nampalli(BT Imaging), Shota Suzuki(Toyo Aluminium)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Th1d-O31-01 (Invited)]

Silver paste reduction for TOPCon solar cells using a hybrid Cu and Ag screen printing metallization

*Pirmin Preis¹, Jan Lossen¹, Mertcan Comak¹, Dominik Rudolph¹ (1. ISC Konstanz (Germany))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Th1d-O31-02]

Screen printed copper contacts fired in air

*Thad Druffel¹, Ruvini Dharmadasa¹, Kevin Elmer¹, Dustin Williams¹, Erin Yenney¹, Apolo Nambo¹, Ajeet Rohatgi², Ajay Upadhyaya², Vijay Kumar², Paul Stradins³, William Nemeth³, Steve Johnston³, Harvey Guthry³ (1. Bert Thin Films, Inc (United States of America), 2. Georgia Institute of Technology (United States of America), 3. National Renewable Energy Laboratory (United States of America))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Th1d-O31-03]

Evaluation of the interface between Ag-saving low-temperature curing electrode paste using Ag-coated Cu particles and transparent conductive oxide film

*Takuya Minowa¹, Tappei Nishihara^{2,3}, Hyunju Lee^{1,2}, Yoshio Ohshita⁴, Kazuo Muramatsu⁵, Ogura Atsushi^{1,2} (1. Meiji University (Japan), 2. MREL (Japan), 3. JASRI (Japan), 4. Toyota Tech. Inst. (Japan), 5. NAMICS Corp. (Japan))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Th1d-O31-04]

Fabrication of Silver Coated Aluminum Powder for Next Generation PV Paste

*Yiyu Zeng¹, Yajie Jiang¹, Martin Green¹ (1. University of New South Wales (Australia))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Th1d-O31-06]

Enabling sub 15 micron hyperfine lines using Ag nanoparticle based pastes for low temperature solar cell applications to achieve cost reduction and faster throughput using different patterning technologies.

*Cesar Marcelo Manna¹ (1. PVNanocell (Israel))

Sub area 2-2: Field Performance of Photovoltaic Systems | Area2: System Engineering and Field Performance : Sub area 2-2: Field Performance of Photovoltaic Systems

📅 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏢 402(4F)

[Th1e-O22] Sub area 2-2: Field Performance of Photovoltaic Systems

Session Chair(s): Yasuyuki Ota (Univ. Miyazaki), Yasuo Chiba (AIST)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Th1e-O22-01 (Invited)]

UV-Induced degradation in various module types

*Peter Hacke¹, Archana Sinha¹, Jiadong Qian¹, Stephanie L. Moffitt¹, Katherine Hurst¹, David C. Miller¹, Laura T. Schelhas¹, Florent Sahli², Marion Dussouillez^{2,3}, Quentin Jeangros^{2,3}, Antonin Faes^{2,3}, Alessandro Virtuani², Christian M. Wolff³, Christophe Ballif^{2,3} (1. NREL (United States of America), 2. CSEM (Switzerland), 3. EPFL (Switzerland))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Th1e-O22-02]

Investigation on light elevated temperature-induced degradation of PERC PV modules

*Tanokkorn Chenvidhya Chenvidhya¹, Manit Seapan¹, Watcharee Phojan¹, Yaowanee Sangpongsanont¹, Ballang Muenpinij¹, Dhirayut Chenvidhya¹ (1. King Mongkut's University of Technology Thonburi (Thailand))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Th1e-O22-03]

A Comparative Study of PERC, HJT and TOPCon Photovoltaic Modules Fielded in Hot Climates

*MAULID KIVAMBE¹, AMIR ABDALLAH¹, MOHAMED ABDELRAHIM² (1. Hamad Bin Khalifa University (HBKU), (Qatar), 2. Bin Omran Trading and Communication, (Qatar))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Th1e-O22-04]

Annual degradation rates and soiling losses of photovoltaic systems in temperate climate

*Tetsuyuki Ishii¹ (1. Central Research Institute of Electric Power Industry (Japan))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Th1e-O22-05]

Degradation behavior of 11-years field aged photovoltaic modules in Thailand science park

*Amornrat Limmanee¹, Rangson Pluemkamon¹, Nuttakarn Udomdachanut¹, Pratan Kosuwan¹, Saifon Kotesopa¹, Suttinan Jaroensathainchok¹, Aswin Hongsingthong¹ (1. ENTEC, National Science and Technology Development Agency (Thailand))

Sub area 5-2: Emerging Materials and New Concepts | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-2: Emerging Materials and New Concepts

📅 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏢 407(4F)

[Th1f-O52] Sub area 5-2: New Concepts and Emerging Technologies

Session Chair(s): Tooru Tanaka (Saga Univ.), Qing Shen (The Univ. of Electro-Communications)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Th1f-O52-01 (Invited)]

Dual-wavelength laser power converters compatible with highly efficient solar cells using triplet-triplet annihilation and singlet fission of molecular systems

*Yasuhiko Takeda¹ (1. Toyota Central R&D Labs., Inc. (Japan))

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[Th1f-O52-02]

Spectral Conversion Thin Films Based on Quantum Dots and Organic Semiconductor Hybrids

*Zhi-Long Zhang^{1,2}, Akshay Rao² (1. School of Emergent Soft Matter, South China University of Technology (China), 2. Cavendish Laboratory, University of Cambridge (UK))

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[Th1f-O52-03]

Growth of P-doped ZnTe layer using a cracked Zn₃P₂ dopant source by MBE and its application to ZnTe based solar cells

*Muhamad Mustofa¹, Katsuhiko Saito¹, Qixin Guo¹, Tooru Tanaka¹ (1. Saga University (Japan))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[Th1f-O52-04]

Below-gap photon induced photocurrent enhancement in GaPN intermediate band solar cell fabricated by ion implantation

*Md Mamun Or Rashid¹, Kyoko Munakata¹, Shuhei Yagi¹, Hiroyuki Yaguchi¹ (1. Saitama University (Japan))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[Th1f-O52-05]

Maximum output power density by photon partitioning optimization in intermediate-band thermoradiative diodes

*Yukihiro Harada¹, Takashi Kita¹ (1. Kobe University (Japan))

Sub area CC-1: Perovskite Tandems | Cross Cutting Areas : Sub area CC-1: Perovskite Tandems

📅 Thu. Nov 14, 2024 11:00 AM - 12:30 PM JST | Thu. Nov 14, 2024 2:00 AM - 3:30 AM UTC 🏛️
Convention Hall B(3F)

[Th2b-Oc1] Sub area CC-1: All-perovskite tandem technologies

Session Chair(s): Dong-Won Kang (Chung-Ang University), Toshimitsu Mochiduki (AIST)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Th2b-Oc1-01 (Invited)]

All-Perovskite Tandem Solar Cells

*Dewei Zhao¹, Cong Chen¹, Jingwei Zhu¹, Yi Luo¹, Yuliang Xu¹ (1. Sichuan University (China))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Th2b-Oc1-02]

Simulation of Reverse-Bias Breakdown in All-Perovskite Tandem Solar Cells and its Impact on Module Performance under Partial Shading Conditions

*Urs Aeberhard^{1,2}, Simon J. Zeder^{1,3}, Hamilton Carillo Nuñez¹, Balthasar Bluelle¹, Beat Ruhstaller^{1,4} (1. Fluxim AG (Switzerland), 2. ETH Zurich (Switzerland), 3. PV-Lab EPFL (Switzerland), 4. ZHAW - Zurich University of Applied Sciences (Switzerland))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Th2b-Oc1-03]

Bimolecular Crystallization Modulation Boosts the Efficiency and Stability of Methylammonium-Free Tin-Lead Perovskite and All-Perovskite Tandem Solar Cells

*Jianan Wang¹ (1. Huazhong University of Science and Technology (China))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Th2b-Oc1-04]

Triple-junction perovskite-perovskite-silicon photovoltaics

*Hang Hu^{1,2}, Sophie X. An², Yang Li^{1,2}, Seyedamir Orooji^{1,2}, Roja Singh^{1,2}, Fabian Schackmar^{1,2}, Felix Laufer^{1,2}, Qihao Jin², Thomas Feeney^{1,2}, Alexander Diercks², Fabrizio Gota^{1,2}, Somayeh Moghadamzadeh^{1,2}, Ting Pan^{1,2}, Michael Rienäcker³, Robby Peibst⁴, Bahram Abdollahi Nejang^{1,2}, Ulrich W. Paetzold^{1,2} (1. Institute of Microstructure Technology (IMT), Karlsruhe Institute of Technology (KIT) (Germany), 2. Light Technology Institute (LTI), Karlsruhe Institute of Technology (KIT) (Germany), 3. Institute for Solar Energy Research Hamelin (ISFH) (Germany), 4. Institute of Electronic Materials and Devices, Leibniz Universität Hannover (Germany))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Th2b-Oc1-05]

Over 2.0 eV wide-bandgap perovskite solar cells with Voc >1.45V and >12% efficiencies.

*Yasuhiro Shirai¹, Dhruva B. Khadka¹, Masatoshi Yanagida¹, Kenjiro Miyano¹ (1. NIMS (Japan))

Sub area 2-2: Field Performance of Photovoltaic Systems | Area2: System Engineering and Field Performance : Sub area 2-2: Field Performance of Photovoltaic Systems

📅 Thu. Nov 14, 2024 11:00 AM - 12:30 PM JST | Thu. Nov 14, 2024 2:00 AM - 3:30 AM UTC 🏛️

301+302(3F)

[Th2c-O22] Sub area 2-2: Field Performance of Photovoltaic Systems

Session Chair(s):Tomonao Kobayashi(Gifu Univ), Yoshihito Eguchi(VENA Energy, Nippon Renewable Energy)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Th2c-O22-01 (Invited)]

Energy Impact of Different Solar Tracker Wind Stow Strategies

*Kyumin Lee¹, Kendra Passow¹, Mudasar Zahoor¹, Todd Andersen¹ (1. Array Technologies (United States of America))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Th2c-O22-02]

Modelling and optimization of east-west bifacial vertical PV systems for hot desert climates: A case study in Qatar

*Veronica Bermudez Benito¹, Juan Lopez-Garcia¹, Bashar Farooq², Nour B. Alabudi², Dhnaup Somasekharan Pillai¹ (1. Qatar Environment and Energy Research Institute (QEERI), Hamad Bin Khalifa University (HBKU) (Qatar), 2. Texas A&M University Qatar (TAMUQ) (Qatar))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Th2c-O22-03]

Impacts of the PV power station on local atmospheric environment in arid area

*Jia Zhang¹, Yuzhen Zhong², Junyu Tao², Yibo Wang¹ (1. Institute of Electrical Engineering, Chinese Academy of Sciences (China), 2. Tianjin University of Commerce (China))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Th2c-O22-04]

VIPV energy rating: How long do your solar electric vehicles run with solar energy backed by appropriate tests from international standards?

*Kenji Araki¹, Yasuyuki Ota¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Th2c-O22-05]

Different snow melt and slide types on photovoltaic power systems

*Hideaki Ohtake¹, Takashi Oozeki¹, Masataka Imai², Masashi Niwano³, Kosuke Ono³ (1. National Institute of Advanced Industrial Science and Technology (Japan), 2. Tokyo University (Japan), 3. Meteorological Research Institute, Japan Meteorological Agency (Japan))

Sub area 3-2: Cells and Modules | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-2: Cells and Modules

📅 Thu. Nov 14, 2024 11:00 AM - 12:30 PM JST | Thu. Nov 14, 2024 2:00 AM - 3:30 AM UTC 🏢 401(4F)

[Th2d-O32] Sub area 3-2: Sustainability in metallization of advanced solar cells

Session Chair(s):Pauls Stradins(National Renewable Energy Laboratory), Itaru Raifuku(Aoyama Gakuin University)

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[Th2d-O32-01]

The future of Al thick film metallisation applications in evolving PV industry : a potential analysis

*Thomas Buck¹, Marwan Dharmin², Dominik Rudolph¹, Kosuke Tsuji² (1. ISC Konstanz (Germany), 2. Toyol (Japan))

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[Th2d-O32-02]

Screen-Printed Metallisation with Ultra-Low Silver Consumption for Industrial Silicon Solar Cells

Yuchao Zhang¹, *Sisi Wang¹, Li Wang¹, Zhenyu Sun¹, Yuan-Chih Chang¹, Ran Chen¹, Catherine Chang¹, Kuninori Okamoto², Yiwei Ao², Dongliang Wang², Marwan Dhamrin^{3,4}, Tsuji Kosuke³, Brett Hallam¹ (1. School of Photovoltaic and Renewable Energy Engineering, University of New South Wales (Australia), 2. Changzhou Fusion New Materials (China), 3. Toyo Aluminium K.K. (Japan), 4. Graduate School of Engineering, Osaka University (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Th2d-O32-03]

Enabling Silver-Free Metallization of the Rear Side of iTOPCon Cells Through Laser Bonding of Thin Aluminum Foil

*Oliver John¹, Daniel Ourinson¹, Gernot Emanuel¹, Andreas Brand¹, Jan-Frederik Nekarda¹, Ralf Preu¹ (1. Fraunhofer Institute for Solar Energy Systems ISE (Germany))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Th2d-O32-04]

Screen-printed aluminium contact for n-type TOPCon structure

*Yuhao Cheng¹, Yuchao Zhang¹, Shuo Deng¹, Lizhi Sun¹, Marwan Dhamrin², Martin Green¹, Ning Song¹ (1. School of Photovoltaic and Renewable Energy, UNSW, Australia (Australia), 2. Toyo Aluminium K.K., 341-14 Higashiyama, Ohtani, Hino-Cho, Gamo-Gun, Shiga, 529-1608, Japan (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Th2d-O32-05]

In free Silicon Heterojunction Solar Cells with SnO₂-based TCO layers

*Hitoshi Sai¹, Takashi Koida¹, Takuya Matsui¹ (1. AIST (Japan))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Th2d-O32-06]

Determination of distributed series resistance with industrial IV testers

*Donald Clugston¹, Bernhard Klöter¹ (1. WAVELABS Solar Metrology Systems GmbH (Germany))

Sub area 4-1: Organic and Inorganic Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-1: Organic and Inorganic Photovoltaics

📅 Thu. Nov 14, 2024 11:00 AM - 12:30 PM JST | Thu. Nov 14, 2024 2:00 AM - 3:30 AM UTC 🏢 402(4F)

[Th2e-O41] Sub area 4-1: Organic and Inorganic Photovoltaics

Session Chair(s): Yutaka Ie (Osaka Univ.), Keisuke Tajima (RIKEN)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Th2e-O41-01 (Invited)]

New p- and n-type photovoltaic materials for organic solar cells

*Han Young Woo¹ (1. Korea University (Korea))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Th2e-O41-02]

Development of a π -Conjugated Polymer Easily Synthesized Without Column Chromatography Towards Low-Cost Efficient Organic Photovoltaics

*Kodai Yamanaka¹, Masahiko Saito¹, Tsubasa Mikie¹, Itaru Osaka¹ (1. Hiroshima Univ. (Japan))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Th2e-O41-03]

Remarkable spectral tailoring of a nonfullerene acceptor for green-light wavelength-selective organic solar cells towards agrivoltaics: module fabrication and crop production

*SHREYAM CHATTERJEE¹, Seiho Jinnai¹, Taichi Moriyama², Morihiko Saida³, Kenji Omote³, Yasuyuki Watanabe⁴, Yutaka Ie¹ (1. The Institute of Scientific and Industrial Research (SANKEN), Osaka University (Japan), 2. Ishihara Sangyo Kaisha, Ltd. (Japan), 3. Design solar inc. (Japan), 4. Department of Mechanical and Electrical Engineering, Faculty of Engineering, Suwa University of Science (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Th2e-O41-04]

Vertical Morphology Evolution in PffBT4T-2OD: ITIC Bulk Heterojunction Blends Influenced by ITIC Non-fullerene Acceptors Through Annealing

*Tzu-Yen Huang¹ (1. National Synchrotron Radiation Research Center (Chinese Taipei))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Th2e-O41-05]

Regulating Molecular Interfaces and Domain Characteristics for Efficient and Green Solvent Processable Organic Solar Cells

*Top Archie Dela Peña^{1,2,3,4}, Jiaying Wu^{1,2}, Ruijie Ma³, Mingjie Li³, Gang Li³, He Yan² (1. The Hong Kong University of Science and Technology (Guangzhou) (China), 2. The Hong Kong University of Science and Technology (Hong Kong), 3. The Hong Kong Polytechnic University (Hong Kong), 4. The University of New South Wales (Australia))

Sub area 1-2: Grid Integration and Energy Management | Area1: PV in Sustainable Energy System : Sub area 1-2: Grid Integration and Energy Management

📅 Thu. Nov 14, 2024 11:00 AM - 12:30 PM JST | Thu. Nov 14, 2024 2:00 AM - 3:30 AM UTC 🏢 407(4F)

[Th2f-O12] Sub area 1-2: Grid Integration and Energy Management

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[Th2f-O12-01]

The National Solar Radiation Database (NSRDB): a global solar resource dataset for PV modeling

*Manajit Sengupta¹, Yu Xie¹, Aron Habte¹, Grant Buster¹, Brandon Benton¹, Paul Edwards¹, Jaemo Yang¹ (1. National Renewable Energy Laboratory (United States of America))

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[Th2f-O12-02]

Firm PV Power

*Jan Remund¹, Richard Perez², Marc Perez³ (1. Meteotest AG (Switzerland), 2. State Univ. of New York at Albany (United States of America), 3. Clean Power Research (United States of America))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[Th2f-O12-03]

Next generation tool for automatic deployment of PV systems in urban environments.

*Miroslav Zeman^{1,2}, Maarten Verkou², Yilong Zhou², Youri Blom¹, Malte Vogt¹, Rudi Santbergen¹, Olindo Isabella^{1,2} (1. Delft University of Technology (Netherlands), 2. PV Works (Netherlands))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[Th2f-O12-04]

Battery energy storage system operation of an off-grid system for a data center, PV, and wind power plants

*Chiyori T. Urabe¹, Ayaka Nakamura¹, Mikimasa Iwata¹, Takeyoshi Kato¹ (1. Nagoya University (Japan))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[Th2f-O12-05]

Hybrid Photovoltaic - Concentrating Solar Power and Energy Storage System: An Economic Pathway to 100% Renewables?

*Joshua S Stein¹, Jenifer L Braid¹, Luke McLaughlin¹, Nathan Schroeder¹, Jeremy Sment¹, Henk Laubscher¹ (1. Sandia National Laboratories (United States of America))

12:15 PM - 12:30 PM JST | 3:15 AM - 3:30 AM UTC

[Th2f-O12-06]

A Prototype System of Decentralized Group-Based Battery Energy Management (DBEM): Empirical Study of PV-Battery Islanded Nanogrid Systems

*Umarin Sangpanich¹, Roongrojana Songprakorp², Veerapol Molyakul¹, Piyapath Siratarnsophon¹, Kulwadee Somboonviwat¹ (1. Faculty of Engineering at Sriracha, Kasetsart University (Thailand), 2. School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi, Thailand (Thailand))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1:
Perovskite Photovoltaics

📅 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏛️ Convention
Hall B(3F)

[Th3b-O51] Sub area 5-1: Emergent perovskite photovoltaics

Session Chair(s): Hao-Wu Lin (National Tsing Hua Univ.), Takeshi Tayagaki (AIST)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Th3b-O51-01 (Invited)]

High efficiency, stable perovskite solar cell minimodules

*Dongmei Li¹, Chunjie Huang¹, Yiming Li¹, Shiyu Jiang¹, Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences (China))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Th3b-O51-02]

Efficient, stable CsPbI₃ solar cells

*Rui Zhang¹, Yuqi Cui¹, Chengyu Tan¹, Dongmei Li¹, Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences (China))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Th3b-O51-03]

Development of multifunctional hole-collecting monolayer materials based on a saddle-like cyclooctatetraene skeleton for inverted perovskite solar cells

*Minh Anh Truong¹, Lucas Ueberricke¹, Tsukasa Funasaki¹, Yuta Adachi¹, Shota Hira¹, Tomoya Nakamura¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Institute for Chemical Research, Kyoto University (Japan))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Th3b-O51-04]

Impedance spectroscopy on perovskite solar cells degraded by outdoor exposure test

*Takuto Kojima¹, Takeshi Tayagaki¹, Kohei Yamamoto¹, Takuro N. Murakami¹, Masahiro Yoshita¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Th3b-O51-05]

Carbazole-free monolayers for tin-lead perovskite solar cells

*Gaurav Kapil^{1,2}, Qing Shen¹, Hiroshi Segawa², Shuzi Hayase¹ (1. University of Electrocommunications, Tokyo, Japan (Japan), 2. The University of Tokyo, Tokyo, Japan (Japan))

Sub area 3-2: Cells and Modules | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-2: Cells and Modules

📅 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏢 401(4F)

[Th3d-O32] Sub area 3-2: Modules and related technologies

Session Chair(s): Marwan Dhamrin (Osaka Univ.), Yasushi Sobajima (Gifu Univ.)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Th3d-O32-01 (Invited)]

[Tentative] Photovoltaics, Concept of Recycling PV, Concept of PV without plastic

*Olindo Isabella¹ (1. Delft University of Technology (Netherlands))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Th3d-O32-02]

Polyethylene Copolymers as Solar Cell Encapsulants: Properties, Challenges, and Future Directions

*Gernot Oreski¹, Chiara Barretta¹, Paul Gebhardt², Karl-Anders Weiss², David C Miller³, Sona Ulicna³, Michael Kempe³, Laura Bruckman⁴, Alessandro Virtuani⁵, Hengyu Li⁵, Brian Habersberger⁶, Kristoof Proost⁷, Marcel Kuehne⁸ (1. Polymer Competence Center Leoben (Austria), 2. Fraunhofer ISE (Germany), 3. National Renewable Energy Laboratory (United States of America), 4. Case Western Reserve University (United States of America), 5. Centre Suisse d'Electronique et de Microtechnique (Switzerland), 6. DOW (United States of America), 7. IP Fab (Belgium), 8. Hanwha QCells (Germany))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Th3d-O32-03]

Environmental Stability of the Contact Resistivity of Interconnects Based on Electrically Conductive Adhesives and its Correlation to Photovoltaic Module Power Loss Under Accelerated Aging Testing

*Maria Ignacia Devoto Acevedo^{1,2}, Karl Wienands¹, Andreas Halm¹, Ralph Gottschalg^{2,3}, Daniel Tune¹ (1. International Solar Energy Research Center Konstanz e.V. (Germany), 2. Hochschule Anhalt/Anhalt University of Applied Sciences (Germany), 3. Fraunhofer Center for Silicon Photovoltaics (CSP) (Germany))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Th3d-O32-04]

Influence of aging test on curved crystalline Si photovoltaic unencapsulated modules with polycarbonate base

*Yo Yamakawa¹, Kazuma Ito¹, Yasuhiro Okada², Yohei Ogashiwa², Hiroaki Takahashi², Naoshi Kimura³, Shuntaro Shimpo⁴, Mitsunori Nagahara⁴, Keisuke Ohdaira⁴, Kazuhiro Gotoh^{1,5}, Atsushi Masuda^{1,5} (1. Grad. School Sci. Tech., Niigata University (Japan), 2. Kyocera Corp. (Japan), 3. Okitsumo Inc. (Japan), 4. JAIST (Japan), 5. IRCNT, Niigata University (Japan))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Th3d-O32-05]

The proof and potential of industrially implementing shade tolerance into PV modules with bypass diodes or parallel connections

*Jonathan Govaerts¹, Tom Borgers¹, Hamed Javanbakht Lomeri¹, Apostolos Bakovasilis¹, Rik Van Dyck¹, Bart Reekmans¹, Hariharsudan Sivaramakrishnan Radhakrishnan¹, Jef Poortmans¹,

Manuel Van den Storme², Guy Van den Storme² (1. imec-EnergyVille-UHasselt (Belgium), 2. VdSWeaving (Belgium))

Sub area 4-2: Compound Thin-film Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-2: Compound Thin-film Photovoltaics

📅 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏢 402(4F)

[Th3e-O42] Sub area 4-2: Chalcogenide solar cells for tandem and new applications

Session Chair(s): Shogo Ishizuka(AIST), Xiaojing Hao(UNSW)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Th3e-O42-01 (Invited)]

Insights from CIGS Community in Advancing Perovskite Tandem Applications

*Veronica Bermudez Benito¹ (1. HBKU-QEERI (Qatar))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Th3e-O42-02]

Perovskite-CIGSe tandem solar cell: over one year of outdoor monitoring

*Guillermo Antonio Farias Basulto¹, Ivona Kafedjiska¹, Maximilian Riedel¹, Quiterie Emery¹, Marko Remec², Paolo Graniero³, Mark Khenkin¹, Christian A. Kaufmann¹, Iver Lauermann¹, Reiner Klenk¹, Steve Albrecht³, Rutger Schlatmann⁴, Carolin Ulbrich¹ (1. PVcomB/Helmholtz-Zentrum Berlin für Materialien und Energie (Germany), 2. University of Ljubljana, Faculty of Electrical Engineering, Laboratory of Photovoltaics and Optoelectronics (Slovenia), 3. Helmholtz-Zentrum Berlin für Materialien und Energie (Germany), 4. HTW Berlin - University of Applied Sciences Berlin (Germany))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Th3e-O42-03]

High efficiency Cu(In,Ga)Se₂ solar cells with cell separation by wet chemical etching

*Jiro Nishinaga¹, Yukiko Kamikawa¹, Hajime Shibata¹, Shogo Ishizuka¹ (1. AIST (Japan))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Th3e-O42-04]

Semi-transparent micro-stripped chalcopyrite Cu(In,Ga)Se₂ solar cells for window applications

*Angélica Thomere¹, Nuno Rodrigues¹, Vikash Kumar¹, Pedro Anacleto¹, Sascha Sadewasser¹ (1. INL (Portugal))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Th3e-O42-05]

Wide Range Band-Gap Tuning for High-Efficiency Kesterite Solar Cells via Solution Processing

Yuancai Gong¹, *Alex Jimenez Arguijo¹, Romain Scaffidi², Ivan Caño Pardes¹, Edoardo Maggi¹, Claudia Malerba³, Matteo Valentini³, David Payno⁴, Guy Brammertz², Mirjana Dimitrievska⁵, Bart Vermang², Zacharie Jehl Li-Kao¹, Sergio Giraldo¹, Edgardo Saucedo¹ (1. Polytechnic University of Catalonia (UPC) (Spain), 2. IMEC (Belgium), 3. ENEA (Italy), 4. Catalonia Institute for Energy Research (IREC (Spain), 5. EMPA (Switzerland))

Sub area 1-1: Policy, Market, Finance and Deployment | Area1: PV in Sustainable Energy System : Sub area 1-1: Policy, Market, Finance and Deployment

🏠 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏠 407(4F)

[Th3f-O11] Sub area 1-1: Sustainability of PV manufacturing and technologies

Session Chair(s): Arnulf Jager-Waldau (European Commission Joint Research Centre), Izumi Kaizuka (RTS Corporation)

2:00 PM - 2:30 PM JST | 5:00 AM - 5:30 AM UTC

[Th3f-O11-01 (Invited)]

The Silicon to Solar (S2S) Study: A Policy Roadmap for Australian Solar Manufacturing

*Michelle Vaqueiro Contreras¹, Brett Hallam^{2,1}, Nathan Chang¹, Oliver Hartley³, Muriel Watt² (1. University of New South Wales (Australia), 2. ITP Renewables (Australia), 3. Bright Dimension (Australia))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[Th3f-O11-02]

Recycling potential for securing PV materials in the future

*Keiichi Komoto¹, Naoto Takatsu¹, Mitsutoshi Okada², Shigeru Niki², Yuzuru Ueda³ (1. Mizuho Research & Technologies, Ltd. (Japan), 2. NEDO Technology Strategy Center (Japan), 3. Tokyo University of Science (Japan))

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[Th3f-O11-03]

Progress of the photovoltaic industry in the reduction of silver consumption for sustainable manufacturing

*Catherine Chan¹, Moonyong Kim¹, Yuchao Zhang¹, Li Wang¹, Sisi Wang¹, Ran Chen¹, Yuan-Chih Chang¹, Brett Hallam¹ (1. UNSW Sydney (Australia))

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Th3f-O11-04]

Floating Photovoltaics under Variable Economic Conditions: Viability and Potential Support Mechanisms

*Leonardo Micheli¹, Fredy A. Sepúlveda-Velez², Diego L. Talavera² (1. Sapienza University of Rome (Italy), 2. University of Jaén (Spain))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[Th3f-O11-05]

Comparative evaluation of the carbon footprint of industrial PV modules with different cell and module technologies

MOONYONG KIM¹, Sisi Wang¹, *Li Wang¹, Catherine Chan¹, Brett Hallam¹ (1. School of Photovoltaic and Renewable Energy Engineering, UNSW Sydney (Australia))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

🏠 Thu. Nov 14, 2024 4:00 PM - 5:30 PM JST | Thu. Nov 14, 2024 7:00 AM - 8:30 AM UTC 🏠 Convention Hall B(3F)

[Th4b-O51] Sub area 5-1: Improved understanding perovskite photovoltaics

Session Chair(s): Takeshi Tayagaki (AIST), Hao-Wu Lin (National Tsing Hua Univ.)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Th4b-O51-01 (Invited)]

Thermal stability of tin-based perovskites solar cells and all-perovskite solar cells composed of tin-based solar cells

*Shuzi Hayase¹ (1. The University of Electro-Communications (Japan))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Th4b-O51-02]

Unveiling what the eye can't see: *in-situ* film quality assessment during perovskite slot-die coating by means of optical reflectance spectroscopy

Nasim Rezaei-Hartmann¹, Alexander Tarasov², Thorsten Brand¹, Claudine Groß¹, Enno Malguth¹, Florian Mathies², Olivier Ronsin³, Kai Segadlo³, Yuto Tomita¹, Eva Unger², *Christian Camus¹ (1. LayTec AG (Germany), 2. Helmholtz-Centre Berlin for Materials and Energy GmbH (Germany), 3. Forschungszentrum Jülich GmbH, Helmholtz Institute Erlangen-Nürnberg (IEK-11), Dynamics of Complex Fluids and Interfaces (Germany))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Th4b-O51-03]

Impact of Drying Processes and Thermal Profiles on the Nucleation of Perovskite Films

*Jihyun Jang¹ (1. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Th4b-O51-04]

Coupling opto-electric and frequency-modulated techniques unravels the role of interfacial ionic aggregates in performance degradation and metastability of perovskite solar cells

*Juan Pablo Medina Flechas^{1,2}, Dounya Barrit¹, Carlos Chaparro¹, Paul Lin¹, Marion Provost², Estelle Cariou², Thomas Guillemot², Karim Medjoubi², Jorge Posada³, Osbel Almora⁴, Camille Bainier¹, Pilar Lopez², Philip Schulz² (1. TotalEnergies OneTech (France), 2. IPVF Institut Photovoltaïque d'Île-de-France (UMR 9006) (France), 3. EDF R&D, IPVF (France), 4. Universitat Rovira i Virgili (URV) (Spain))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Th4b-O51-05]

Multicomponent Approach for Stable Methylammonium-Free Tin-Lead Perovskite Solar Cells

*Silver Hamill Turren Cruz^{1,2,7}, Jorge Pascual^{2,4}, Shuaifeng Hu^{2,3}, Jesus Sanchez-Diaz¹, Sergio Galve-Lahoz^{1,4}, Wentao Liu², Wolfram Hempel⁵, Vladimir S. Chirvony⁶, Juan P. Martinez-Pastor⁶, Pablo P. Boix⁶, Atsushi Wakamiya², Iván Mora-Seró¹ (1. University Jaume I (Spain), 2. Kyoto University (Japan), 3. University of Oxford (UK), 4. University of the Basque Country (Spain), 5. Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (Germany), 6. University of Valencia (Spain), 7. Polish Academy of Sciences (Poland))

Sub area 5-2: Emerging Materials and New Concepts | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-2: Emerging Materials and New Concepts

📅 Thu. Nov 14, 2024 4:00 PM - 5:30 PM JST | Thu. Nov 14, 2024 7:00 AM - 8:30 AM UTC 🏢 401(4F)

[Th4d-O52] Sub area 5-2: Perovskite-related New Materials and Technologies

Session Chair(s): Yasuhiro Tachibana (RMIT Univ.) , Yasuhiko Takeda (Toyota Central R&D Labs., Inc.)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Th4d-O52-01 (Invited)]

Charge carrier dynamics of metal halide perovskite in correlation with their solar cell performance

*Yasuhiro Tachibana¹ (1. RMIT Univ. (Australia))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Th4d-O52-02]

Increased durability of formamidinium lead iodide perovskite solar cells attained by incorporating an adlayer composed of FAPbI₃-QDs treated with fs laser

*Vladimir Svrcek¹, Bruno Alessi¹, Calum McDonald¹, Zhihao Xu¹, Takuya Matsui¹ (1. AIST Tsukuba (Japan))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Th4d-O52-03]

Enhanced Efficiency and Stability of Sn:Ge (1:1) Perovskite Solar Cells Following Additive Engineering

*Ajay Kumar Baranwal¹, Qing Shen¹, Shuzi Hayase¹ (1. The University of Electro-Communications (Japan))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Th4d-O52-04]

Band gap reducing strategies for ultra narrow band gap (~1.2 eV) halide perovskites by compositional engineering

*Jeong-Yeon Lee¹, Dong-Won Kang¹ (1. Chung-Ang University (Korea))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Th4d-O52-05]

Silane derivatives with electron withdrawing group at a weak adhesion interface enhances stability of perovskite solar cells

*Chunyang Zhang¹, Nam-Gyu Park¹ (1. Sungkyunkwan University (Korea))

Sub area 4-1: Organic and Inorganic Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-1: Organic and Inorganic Photovoltaics

📅 Thu. Nov 14, 2024 4:00 PM - 5:30 PM JST | Thu. Nov 14, 2024 7:00 AM - 8:30 AM UTC 🏢 402(4F)

[Th4e-O41] Sub area 4-1: Organic and Inorganic Photovoltaics

Session Chair(s): Masatoshi Yanagida(NIMS), Tingli Ma(Kyushu Institute of Technology)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Th4e-O41-01 (Invited)]

How to reduce the energy loss at the interfaces of dye-sensitized solar cells by controlling electron transfer rates

*Shogo Mori¹ (1. Shinshu University (Japan))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Th4e-O41-02]

Effect of Permanent Quadrupole on Donor-Acceptor Interfacial Electronic Levels in Organic Thin Film Solar Cells

*Makoto Miura¹, Kyohei Nakano², Keisuke Tajima², Hiroyuki Yoshida³ (1. The Graduate School of Engineering (Japan), 2. RIKEN CEMS (Japan), 3. MCRC (Japan))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Th4e-O41-03]

Solution processing and applications of flexible organic photovoltaics

*Lulu Sun¹ (1. RIKEN (Japan))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Th4e-O41-04]

Hysteresis analysis in perovskite solar cells by considering ionic conduction

*Ryotaro Fukuda¹, Takahito Nishimura¹, Akira Yamada¹ (1. Tokyo Institute of Technology (Japan))

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[Th4e-O41-05]

Development of an Indium Tin Oxide Stack Layer for the Rear Contact of Semi-Transparent Perovskite Solar Cells as the Top Cell in Four-Terminal Tandem Solar Cells

Taweewat Krajangsang¹, Wassana Lekkla^{2,3}, Channarong Piromjit¹, *Amornrat Limmanee¹ (1. National Energy Technology Center (ENTEC), National Science and Technology Development Agency (NSTDA) (Thailand), 2. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT) (Thailand), 3. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King King Mongkut's University of Technology Thonburi (KMUTT) (Thailand))

Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics | Area2: System Engineering and Field Performance : Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics

📅 Thu. Nov 14, 2024 4:00 PM - 5:30 PM JST | Thu. Nov 14, 2024 7:00 AM - 8:30 AM UTC 🏢 407(4F)

[Th4f-O21] Sub area 2-1: New Applications of Photovoltaics

Session Chair(s): Tetsuya Nakamura(JAXA), Mitsuru Imaizumi(Sanjo City Univ.)

4:00 PM - 4:30 PM JST | 7:00 AM - 7:30 AM UTC

[Th4f-O21-01 (Invited)]

Radiation sensing using Si, InGaP, CIGS, and perovskite solar cells

*Yasuki Okuno¹ (1. RIKEN (Japan))

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[Th4f-O21-02]

Digital Twin Simulation for Optimization of Regional Energy Systems with Photovoltaic Generation

*Yoshitaka Hayakawa¹, Keiji Igarashi², Shuto Tsuchida², Noboru Yamada² (1. National Institute of Technology, Nagaoka College (Japan), 2. Nagaoka University of Technology (Japan))

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[Th4f-O21-03]

Stability Evaluation of structural colored PV modules for BIPV applications

*Zhihao Xu¹, Takuya Matsui¹, Hitoshi Sai¹ (1. AIST (Japan))

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[Th4f-O21-05]

Implementation and feasibility study of a digital twin model for a bifacial PV system using ray tracing method

*Seokhun Yoo¹, Kyungsoo Lee¹, Masakazu Ito² ((1. Tech University of Korea (Korea), 2. University of Fukui (Japan)))

Plenary | Plenary

📅 Fri. Nov 15, 2024 9:00 AM - 9:30 AM JST | Fri. Nov 15, 2024 12:00 AM - 12:30 AM UTC 🏛️ Convention Hall A(1F)

[Fr1a-L2] Plenary 2

Session Chair:Hiromi Tobita(JET)

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[Fr1a-L2-01]

Challenges and Opportunities for the Next-Generation BIPV

*Akihiko Nakajima¹ (1. KANEKA (Japan))

Plenary | Plenary

📅 Fri. Nov 15, 2024 9:30 AM - 10:00 AM JST | Fri. Nov 15, 2024 12:30 AM - 1:00 AM UTC 🏛️ Convention Hall A(1F)

[Fr1a-L2] Plenary 2

Session Chair:Mitsuru Imaizumi(Sanjo City Univ.)

9:30 AM - 10:00 AM JST | 12:30 AM - 1:00 AM UTC

[Fr1a-L2-02]

Solar Energy At Night Using A Thermoradiative Diode

*Ned Ekins-Daukes¹ (1. UNSW Sydney (Australia))

Plenary | Area4: Thin-film Photovoltaics and Modules

📅 Fri. Nov 15, 2024 10:00 AM - 10:30 AM JST | Fri. Nov 15, 2024 1:00 AM - 1:30 AM UTC 🏛️ Convention Hall A(1F)

[Fr1a-L4] Plenary 4

Session Chair(s): Yoshitaro Nose (Kyoto Univ), Itaru Osaka (Hiroshima Univ.)

10:00 AM - 10:30 AM JST | 1:00 AM - 1:30 AM UTC

[Fr1a-L4-01]

High-efficiency multi-junction laser power converters for telecom wavelength operation

*Karin Hinzer¹ (1. University of Ottawa (Canada))

Plenary | Area4: Thin-film Photovoltaics and Modules

📅 Fri. Nov 15, 2024 11:00 AM - 11:30 AM JST | Fri. Nov 15, 2024 2:00 AM - 2:30 AM UTC 🏛️ Convention Hall A(1F)

[Fr2a-L4] Plenary 4

Session Chair(s): Yoshitaro Nose (Kyoto Univ), Itaru Osaka (Hiroshima Univ.)

11:00 AM - 11:30 AM JST | 2:00 AM - 2:30 AM UTC

[Fr2a-L4-01]

Rational Molecular Design for Dye-Sensitized and Bulk Heterojunction Solar Cells

*Hiroshi Imahori¹ (1. Kyoto University (Japan))

Plenary | Area4: Thin-film Photovoltaics and Modules

📅 Fri. Nov 15, 2024 11:30 AM - 12:00 PM JST | Fri. Nov 15, 2024 2:30 AM - 3:00 AM UTC 🏛️ Convention Hall A(1F)

[Fr2a-L4] Plenary 4

Session Chair(s): Yoshitaro Nose (Kyoto Univ), Itaru Osaka (Hiroshima Univ.)

11:30 AM - 12:00 PM JST | 2:30 AM - 3:00 AM UTC

[Fr2a-L4-02]

Flexible Perovskite/Chalcopyrite Tandem Solar Cells for New Field Applications

*Hiroki Sugimoto¹ (1. PXP Corporation (Japan))

Closing | Closing

📅 Fri. Nov 15, 2024 12:00 PM - 1:30 PM JST | Fri. Nov 15, 2024 3:00 AM - 4:30 AM UTC 🏛️ Convention Hall A(1F)

[Closing] Closing

Welcome to the Closing Session
Highlights of the Conference
Ceremony of the Awards
Announcement upcoming PV events
Farewell and Closing

12:00 PM - 1:30 PM JST | 3:00 AM - 4:30 AM UTC

Closing

Posters

Sub area 3-1: Materials, Processes, Fundamentals | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-1: Materials, Processes, Fundamentals

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏛️ PS-11/Multipurpose Hall (1F)

[Tu2-P31] Sub area 3-1 : Materials, Processes, Fundamentals

[Tu2-P31-01]

Solar silicon: the past, the present, and the Future

*Chung-wen Lan¹ (1. National Chinese Taipei University (Chinese Taipei))

[Tu2-P31-02]

Temperature Dependence of the Ambipolar Auger Coefficient in Crystalline Silicon

*Lachlan E. Black¹, Yan Zhu², Ziv Hameiri², Daniel H. Macdonald¹ (1. Australian National University (Australia), 2. University of New South Wales (Australia))

[Tu2-P31-03]

On the nature of separated striations in n-type Czochralski silicon solar cells

*Guixiu Li^{1,2}, Shuai Yuan^{1,2}, Shenglang Zhou³, Yihua Wu³, Hongrong Chen³, Huali Zhang³, Chen Wang³, Lei Wang¹, Xuegong Yu¹, Deren Yang^{1,2} (1. State Key Laboratory of Silicon and Advanced Semiconductor Materials and School of Materials Science and Engineering, Zhejiang University (China), 2. Shangyu Institute of Semiconductor Materials (China), 3. Jiangsu GCL Silicon Material Technology Development Co., Ltd (China))

[Tu2-P31-04]

Electrical property of iron-decorated stacking fault and its hydrogenation in n-type Czochralski silicon used for photovoltaic

*Ruokai Wu¹, Xuegong Yu¹, Deren Yang¹ (1. Zhejiang University (China))

[Tu2-P31-05]

Effects of carbon concentration in silicon crystal on the concentration of defects induced by IWO-RPD process

*Keita Kimura¹, Tomohiko Hara^{1,2}, Yoshio Ohshita¹ (1. Toyota Technological Institute (Japan), 2. Ritsumeikan University (Japan))

[Tu2-P31-06]

Analysis of crystal defects inside mono-cast Si ingot using PL imaging

*Hidetaka Hirono¹, Hitoshi Matsuo², Hideyoshi Tanabe², Noritaka Usami^{1,3,4} (1. Graduate School of Engineering, Nagoya University (Japan), 2. Kyocera corporation (Japan), 3. InFuS, Nagoya university (Japan), 4. IMASS, Nagoya university (Japan))

[Tu2-P31-07]

Exciton Fission Enhanced Silicon Solar Cell

*Kangmin Lee¹, Narumi Nagaya¹, Collin F. Perkinson¹, Aaron Li¹, Youri Lee², Xinjue Zhong³, Sujin Lee³, Leah P. Weisburn¹, Tomi K. Baikie¹, Mounji G. Bawendi¹, Troy Van Voorhis¹, William A. Tisdale¹, Antoine Kahn³, Kwanyong Seo², Marc A. Baldo¹ (1. Massachusetts Institute of Technology (United States of America), 2. Ulsan National Institute of Science and Technology (Korea), 3. Princeton University (United States of America))

[Tu2-P31-08]

A study of laser doping process with p-doped amorphous silicon layer for high-efficiency integrated back contact cell

*Yeongseo Son¹, MyeongSeob Sim², Hoyoung Song², Youngho Choe³, Yoonmook Kang¹, Hae-Seok Lee¹, Donghwan Kim² (1. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea), 2. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 3. Institute of Energy Technology, Korea University, Republic of Korea (Korea))

[Tu2-P31-09]

Numerical simulation study for analysis of Si nanocrystal / SiO_x compound layer by ReaxFF Molecular Dynamics

*Genta Tamura^{1,2}, Naoya Uene², Kazuhiro Gotoh^{3,4,5}, Noritaka Usami⁵, Takashi Tokumasu² (1. Graduate School of Eng., Tohoku University (Japan), 2. Inst. of Fluid Science, Tohoku University (Japan), 3. School of Eng., Niigata University (Japan), 4. IRCNT, Niigata University (Japan), 5. Graduate School of Eng., Nagoya University (Japan))

[Tu2-P31-10]

Improved passivation of Al-doped zinc oxide passivating contacts for silicon solar cells by engineering the proximity of the first layer of aluminum atoms to the silicon interface

*Piyumi Kodithuwakku¹, Daniel Macdonald², Lachlan Black³ (1. PhD student (Australia), 2. Professor (Australia), 3. Senior Research Fellow (Australia))

[Tu2-P31-11]

Improving the passivation performance of doped poly-Si contacts on textured surfaces

*Rabin Basnet¹, Wei Wang¹, Anitta Rose Varghese¹, Stephane Armand¹, Heping Shen¹, Daniel Macdonald¹ (1. The Australian National University (Australia))

[Tu2-P31-12]

Suppression of film blistering in silicon nano-crystals/silicon oxide composite layer by insertion of intrinsic hydrogenated amorphous silicon layer

*Kazushi Mizutani¹, Kazuhiro Gotoh^{1,2,3}, Tomohisa Tachibana⁴, Yasuyoshi Kurokawa^{1,6}, Takahiro Ozawa⁵, Markus Wilde⁵, Katsuyuki Fukutani⁵, Noritaka Usami^{1,6,7} (1. Nagoya University (Japan), 2. Niigata University (Japan), 3. IRCNT, Niigata University (Japan), 4. FREA, AIST (Japan), 5. University of Tokyo (Japan), 6. InFuS, Nagoya University (Japan), 7. IMaSS, Nagoya University (Japan))

[Tu2-P31-13]

Electrical properties manipulation of nanocrystalline silicon/silicon oxide composite films

*Kaori Takagi¹, Asaki Arata², Yasuyoshi Kurokawa^{2,3}, Atsushi Masuda^{1,4}, Noritaka Usami^{2,3,5}, Kazuhiro Gotoh^{1,2,4} (1. Grad. Sch. Sci. Technol., Niigata Univ. (Japan), 2. Grad. Sch. Engr., Nagoya Univ. (Japan), 3. InFuS, Nagoya Univ. (Japan), 4. IRCNT, Niigata Univ. (Japan), 5. IMaSS, Nagoya Univ. (Japan))

[Tu2-P31-14]

High-Quality Tunnel Oxide Passivated Contact Fabricated Using Sputtered Amorphous Silicon and Spin-On Doping

*Shasha Li¹, Koki Omori¹, Yasushi Kawaguchi¹, Noboru Yamaguchi¹, Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan))

[Tu2-P31-15]

How Low Can Poly Go: Development of Nanometer-scale Transparent Polysilicon Passivated Contacts

*Kean Chern Fong¹, Di Yan², Stephane Armand¹, Peiting Zheng³, Xinyu Zhang³, Jie Yang³, James Bullock², Daniel MacDonald¹ (1. The Australian National University (Australia), 2. University of Melbourne (Australia), 3. Jinko Solar (China))

[Tu2-P31-16]

Effect of TiO_x layer thickness and LiF interlayer on the passivation performance of TiO_x/Si heterostructure

*Shohei Fukaya¹, Kazuhiro Gotoh^{1,3,4}, Hitoshi Sai², Yasuyoshi Kurokawa¹, Noritaka Usami^{1,5}, Takuya Matsui² (1. Graduate School of Engineering, Nagoya University (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Graduate School of Science and Technology, Niigata University (Japan), 4. IRCNT, Niigata University (Japan), 5. InFuS, Nagoya University (Japan))

[Tu2-P31-17]

Numerical analysis of TiO_x/Si Heterostructure with Molecular Dynamics Simulation

*Shohei Fukaya¹, Yuto Michishita¹, Naoya Uene², Kazuhiro Gotoh^{1,3,4}, Takashi Tokumasu², Noritaka Usami^{1,5} (1. Graduate School of Engineering, Nagoya University (Japan), 2. Institute of Fluid Science, Tohoku University (Japan), 3. Graduate School of Science and Technology, Niigata University (Japan), 4. IRCNT, Niigata University (Japan), 5. Institutes of Innovation for Future Society, Nagoya University (Japan))

[Tu2-P31-18]

Impact of microstructure of PEDOT:PSS on the performance of Si heterojunction solar cells

*Kengo Yamanaka¹, Yasuyoshi Kurokawa², Tetsuo Soga¹, Shinya Kato¹ (1. Nagoya Institute of Technology (Japan), 2. Nagoya University (Japan))

[Tu2-P31-19]

ALD-TiO_x and PVD-MoO_x in dopant-free silicon heterojunction solar cells

*Liqi Cao¹, Roel Theeuwes², Yifeng Zhao¹, Paul Procel¹, Erwin Kessels², Miro Zeman¹, Luana Mazzarella¹, Olindo Isabella¹ (1. Delft University of Technology (Netherlands), 2. Eindhoven University of Technology (Netherlands))

[Tu2-P31-20]

Silicon heterojunction solar cells with double-layer structure (n)nc-SiO_x: H.

*Guanlan Chen¹, Xuejiao Wang¹, Yuxiang Li¹, Xiaodan Zhang¹, Ying Zhao¹ (1. Nankai University (China))

[Tu2-P31-21]

Deep Level Transient Spectroscopy Study of Silicon Heterojunction Solar Cells

*Ka-Hyun Kim¹, Dohoe Kim¹, Yongrae Kim¹, Yuntak Han¹, Jinyoung Lee¹, Seewoo Sim¹ (1. Chungbuk National University (Korea))

[Tu2-P31-22]

Laser cutting induced damage in heterojunction silicon solar Cells

*Xiang Lv¹, Zechen Hu¹, Qiyuan He¹, Lifei Yang², Deren Yang¹, Xuegong Yv¹ (1. State Key Laboratory of Silicon and Advanced Semiconductor Materials and School of Materials Science and Engineering, Zhejiang University (China), 2. SuZhou GH New Energy Tech (China))

[Tu2-P31-23]

Investigation of deposition conditions for multilayer passivation thin films using Bayesian optimization with hydrogen concentration as an index

*Soma Kondo¹, Yasuyoshi Kurokawa^{1,2}, Kazuhiro Gotoh^{3,4}, Kentaro Kutukake^{1,5}, Noritaka Usami^{1,2,5} (1. Grad. Sch Eng, Nagoya Univ (Japan), 2. InFuS, Nagoya Univ (Japan), 3. Grad. Sch Sci. Technol, Niigata Univ (Japan), 4. IRCNT, Niigata Univ (Japan), 5. IMass, Nagoya Univ (Japan))

[Tu2-P31-24]

Hydrogen diffusion and passivation in a-Si:H/Si heterojunction

*Ryoji Asahi¹, Koki Sato¹, Takayuki Semba¹, Ryosuke Jinnouchi¹ (1. Nagoya University (Japan))

[Tu2-P31-25]

Investigating the Impact of UV Light During PECVD on Defect Formation and Electrical Performance in Silicon Solar Cells Using C-V Analysis

*SUBHASH CHAND YADAV¹, Hyunju Lee², Tomohiko Hara³, Yoshio Ohshita¹ (1. TOYOTA TECHNOLOGICAL INSTITUTE JAPAN (Japan), 2. Meiji University, Japan (Japan), 3. Ritsumeikan University, Japan (Japan))

[Tu2-P31-26]

Preparation of mixed amorphous oxide films for passivation of crystalline silicon surfaces by mist chemical vapor deposition

*Koji Arafune¹, Atsushi Nakano¹, Takuto Otsuji¹, Rikuto Yabubayashi¹ (1. University of Hyogo (Japan))

[Tu2-P31-27]

Outstanding Surface Passivation of Textured Si Surfaces by Chlorinated Thin Films

*Mohamed M. Shehata¹, Daniel H. Macdonald¹, Lachlan E. Black¹ (1. School of Engineering, The Australian National University, Canberra, ACT 2600, Australia. *mohamed.ismael@anu.edu.au (Australia))

[Tu2-P31-28]

Deposition of silicon dioxide thin films on black silicon nanowires by liquid phase deposition process for photovoltaic applications.

*Muhiddin Ahmad Sheriff^{1,2}, Md Roslan Hashim², Mohd Zamir Pakhuruddin^{2,3}, Mohammed Waziri Zanna¹, Adamu Ahmed Goje¹ (1. Federal Polytechnic Damaturu, P.M.B. 1006, Yobe state, (Nigeria), 2. School of Physics, Universiti Sains Malaysia, 11800, Minden, Penang, (Malaysia), 3. Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia, 11800, USM Penang, (Malaysia))

[Tu2-P31-29]

Preparation of silicon nanosheets for solar cell applications

*Sota Okochi¹, Satoru Miyamoto¹, Shinya Kato², Noritaka Usami^{1,3,4}, Yasuyoshi Kurokawa¹ (1. Nagoya University (Japan), 2. Nagoya Institute of Technology (Japan), 3. InFuS Nagoya University (Japan), 4. IMaSS Nagoya University (Japan))

[Tu2-P31-30]

Improvement of surface roughness through surface modification and viscosity

*Tomohisa Goto Goto¹, Shogo Otsuka¹, Masami Kobayashi¹, Masaki Nakamura¹ (1. USHIO (Japan))

[Tu2-P31-31]

Highly controllable metal free sub-micrometre texturing of silicon substrate

*Wei Wang¹, Rabin Basnet¹, Qian Cui¹, Daniel MacDonald¹, Klaus Weber¹, Heping Shen¹ (1. The Australian National University (Australia))

[Tu2-P31-33]

Effect of cooling rate temperature on controlling the Ge concentration in SiGe layer formation

*Sarah Saleh Alamri¹, Shota Suzuki², Moeko Matsubara², Kaito Kitaura¹, Taruna Jupalli¹, Yuqing Li¹, Hideaki Minamiyama², Takashi Kuroki², Satoshi Hamaguchi¹, Marwan Dhamrin^{1,2} (1. Graduate School of Engineering, Osaka University. (Japan), 2. Toyo Aluminium K.K, Yao, Osaka. (Japan))

[Tu2-P31-34]

Epitaxial growth of SiGe with thick Ge-rich regions on Si(111) substrates by screen-printing and annealing

*Kohei Ito¹, Ryoji Katsube¹, Yuki Imai², Satoru Miyamoto^{1,2}, Shota Suzuki³, Hideaki Minamiyama³, Marwan Dhamrin^{3,4}, Noritaka Usami^{1,2,5} (1. Graduate School of Engineering, Nagoya University (Japan), 2. Institutes of Innovation for Future Society, Nagoya University (Japan), 3. Toyo Aluminium K.K (Japan), 4. Graduate School of Engineering, Osaka University (Japan), 5. Institute of Materials and Systems for Sustainability, Nagoya University (Japan))

[Tu2-P31-35]

Effect of Ge contents in the Al-Ge paste on SiGe layer growth characteristics by Al-induced crystallization method

*yuqing Li¹, Taruna Teja Jupalli¹, Shota Suzuki², Sarah Alamri¹, Moeko Matsubara², Hideaki Minamiyama², Marwan Dhamrin^{1,2} (1. Graduate School of Engineering, Osaka University (Japan), 2. Toyo Aluminium K.K, Yao (Japan))

[Tu2-P31-36]

Effect of pre-oxidation parameters on Al-Ge screen printed silicon substrates for improved SiGe layer growth

*Taruna Teja Jupalli¹, Shota Suzuki², Sarah Alamri¹, Yuqing Li¹, Kaito Kitaura¹, Moeko Matsubara², Hideaki Minamiyama², Marwan Dhamrin^{1,2} (1. Graduate School of Engineering, Osaka University (Japan), 2. Toyo Aluminium K.K (Japan))

[Tu2-P31-37]

Silver Recovery from Crystalline Silicon Photovoltaic Solar Cells using Continuous Stirred-Tank Reactors

Shuang Song¹, *Yuting Zhuo¹ (1. University of New South Wales (Australia))

[Tu2-P31-38]

Heat Transfer Calculation in Silicon Solar Module: A Computational Approach

*Myeongji Woo¹, MyeongSeob Sim², Ji Woo Sohn³, Dongjin Choi⁴, Youngho Choe⁵, Donghwan Kim⁶, Hae-Seok Lee⁷, Yoonmook Kang⁸ (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 3. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 4. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 5. Institute of Energy Technology, Korea University, Republic of Korea (Korea), 6. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 7. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea), 8. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea))

[Tu2-P31-39]

Moisture ingress evaluation in UV exposed double glass PV modules

*Sergiu Pop¹, Mihail Bora² (1. SCP SYS (United States of America), 2. Lawrence Livermore National Laboratory (United States of America))

Sub area 4-2: Compound Thin-film Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-2: Compound Thin-film Photovoltaics

🏠 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏠 PS-12/Multipurpose Hall (1F)

[Tu2-P42] Sub area 4-2: Compound Thin-film Photovoltaics

[Tu2-P42-01]

Doping technology for High-efficiency Transparent Cu₂O Top cells

*Yuya Honishi¹, Naoyuki Nakagawa¹, Soichiro Shibasaki¹, Yukitami Mizuno¹, Atsushi Wada¹, Sara Yoshio¹, Motohiro Toyota¹, Kodai Wakamatsu¹, Takashi Yamamoto¹, Junji Sano¹, Kanta Sugimoto¹, Kazushige Yamamoto¹ (1. Toshiba Corporation (Japan))

[Tu2-P42-03]

Electrical properties of the Cu₂Sn_{1-x}Ge_xS₃ absorbing layer in solar cells as determined by admittance spectroscopy and related methods

*Ayaka Kanai¹, Takeshi Tasaki², Hideaki Araki², Kunihiko Tanaka¹ (1. Nagaoka University of Technology (Japan), 2. National Institute of Technology, Nagaoka College (Japan))

[Tu2-P42-04]

Study on the deposition process of metal precursors in Cu(In,Ga)S₂

*Yota Suzuki¹, Hiromu Kobayashi¹, Takahito Nishimura¹, Akira Yamada¹ (1. Tokyo Institute of Technology (Japan))

[Tu2-P42-05]

Defect regulation in Emerging Kesterite Solar Cells

*Jiangjian Shi¹, Qingbo Meng¹ (1. Institute of Physics, Chinese Academy of Sciences (China))

[Tu2-P42-06]

Self-healing effects of heat-light soaking on proton-bombarded Cu(In,Ga)(S,Se)₂ solar cells for low earth orbit applications

*Yao-Kai Chang¹, Tzu-Ying Lin¹ (1. National Tsing Hua University (Chinese Taipei))

[Tu2-P42-07]

Solar cell neutron dosimeters using screen-printed B₄C, LiF, and Gd₂O₃ converter-films

*Tamotsu Okamoto¹, Koshi Kato¹, Akito Iwasaki¹, Ayuto Kobayashi¹, Yuji Kurimoto¹, Yukiko Kamikawa², Yasuki Okuno³, Tomohiro Kobayashi³ (1. National Institute of Technology, Kisarazu College (Japan), 2. AIST (Japan), 3. RIKEN (Japan))

[Tu2-P42-08]

Development of Li-doped NiO Thin Films for Effective Hole Transport in CIGSe Solar Cells

*Yosuke Abe¹, Takahito Nishimura¹, Akira Yamada¹ (1. Tokyo Institute of Technology (Japan))

[Tu2-P42-09]

Study of alkali metal-controlled band engineering of chalcogenide semiconductors

*Kazuo Jimbo¹, Yosuke Shimamune¹ (1. National Institute of Technology, Nagaoka College, Japan (Japan))

[Tu2-P42-10]

Development of CZTS thin film solar cells with sulfurized ZnO buffer

*Yosuke Shimamune¹, Towa Maruyama², Kazuo Jimbo¹ (1. National Institute of Technology (KOSEN), Nagaoka College (Japan), 2. Nagaoka University of Technology (Japan))

[Tu2-P42-11]

Defect engineering in arsenic-doped CdTe single crystals for photovoltaic application

*Akira Nagaoka¹, Kenji Yoshino¹, Koji Kimura², Koichi Hayashi², SU-Huai Wei³, Kensuke Nishioka¹ (1. University of Miyazaki (Japan), 2. Nagoya Institute of Technology (Japan), 3. Beijing Computational Science Research Center (China))

[Tu2-P42-12]

Enhanced self-healing behaviors of (Ag,Cu)(In,Ga)Se₂ thin-film solar cells through Ag incorporation

*Kai-Chun Lo¹, Tzu-Ying Lin¹ (1. National Tsing Hua University (Chinese Taipei))

[Tu2-P42-13]

Enhanced radiation resistance in potassium doped Cn(In,Ga)(S,Se)₂ thin-film solar cells

*Wei-Huang Chen¹, Tzu-Ying Lin¹ (1. National Tsing Hua University (Chinese Taipei))

[Tu2-P42-14]

Na doping effects for photoluminescence of Cu₂Sn_{1-x}Ge_xS₃ thin films

*Ryodai Ichihara¹, Takeshi Tasaki², Hideaki Araki², Ayaka Kanai¹, Kunihiko Tanaka¹ (1. Nagaoka University of Technology (Japan), 2. National Institute of Technology (KOSEN), Nagaoka College (Japan))

[Tu2-P42-15]

Effect of Rb addition on Cu₂SnS₃ thin film solar cells

*Kazuki Hasegawa¹, Hideaki Araki¹ (1. National Institute of Technology, Nagaoka College (Japan))

[Tu2-P42-16]

Structural and optical properties of widegap CIGS/ZTO heterojunction solar cells

*Takeshi Nishida¹, Norio Terada^{1,2}, Shogo Ishizuka¹ (1. AIST (Japan), 2. Kagoshima Univ. (Japan))

[Tu2-P42-17]

Deposition of (In, Ga)₂S₃ thin film via mist CVD method under a controlled atmosphere

*Akihiro Funaki¹, Yohei Araki¹, Takahito Nishimura¹, Akira Yamada¹ (1. Tokyo Institute of Technology (Japan))

[Tu2-P42-18]

Unveiling the Potential of Four Terminal Chalcogenide-Bornite Tandem Solar Cell

*Deepak Joshi¹, HITARTH PATEL¹, Sharadkumar Fadadu¹, Ashok Meka¹, Vivek Garg¹ (1. S V National Institute of Technology (India))

[Tu2-P42-19]

Analysing the effectiveness of Thin-films for Multijunction Photovoltaic Applications: Chalcogenide and Bournonite

*Deepak Joshi¹, Sharadkumar Fadadu¹, Hitarth Patel¹, Prashant Reddy¹, Prathamrajsinh Chauhan¹ (1. Sardar Vallabhbhai National Institute of Technology, Surat (India))

[Tu2-P42-20]

Fabrication of (Ge, Sn)S thin film solar cells prepared by co-evaporation

*Sora Daimon¹, Hideaki Araki¹ (1. National Institute of Technology, Nagaoka College (Japan))

[Tu2-P42-21]

Improving efficiency of low-temperature single grading Cu(In,Ga)Se₂ thin film solar cells through CsF post-deposition treatment

*JuHee Lee¹, Seunghwan Ji¹, Yazhi Wang¹, Byungha Shin¹ (1. Korea Advanced Institute of Science and Technology (KAIST) (Korea))

[Tu2-P42-22]

Fabrication and characterization of potassium and silver alloyed CIASse solar cells

JunHo Kim¹, *TaeEi Hong¹, Md. Matiur Rahman¹, HaeHoon Jung¹ (1. Department of Physics, Incheon National University (Korea))

[Tu2-P42-23]

Formation of novel BaSi₂ light absorber layers on n⁺-Si electron transport layers by RF sputtering

*Takumi Sato¹, Rui Du¹, Koki Hayashi¹, Yoichiro Koda², Masami Mesuda², Kaoru Toko¹, Takashi Suemasu¹ (1. University of Tsukuba (Japan), 2. Tosoh Corporation (Japan))

[Tu2-P42-24]

Chemical bath deposition of Zn(O,S) buffer for CIGSSe thin-film solar cells

*Md Matiur Rahman¹, Namuundari Otgontamir¹, TaeEi Hong¹, JunHo Kim¹ (1. Department of Physics, Incheon National University (Korea))

[Tu2-P42-25]

Performance enhancement of Sb₂(S,Se)₃ solar cells by tailoring bandgap gradient via a hybrid growth method

*Seunghwan Ji¹, Yazhi Wang¹, HeeJoon Jung², Byungha Shin¹ (1. Korea Advanced Institute of Science and Technology (Korea), 2. Korea Research Institute of Standards and Science (Korea))

[Tu2-P42-26]

Additive-assisted hydrothermal growth enabling defect passivation and void remedy in antimony selenosulfide solar cells

*Yazhi Wang¹, Seunghwan Ji¹, Hee Joon Jung², Byungha Shin¹ (1. Korea Advanced Institute of Science and Technology (KAIST) (Korea), 2. Korea Research Institute of Standards and Science (KRISS) (Korea))

[Tu2-P42-27]

Orientations and *J-V* characteristics of SnS homojunction solar cells fabricated by LPE

*Takayuki Miyai¹, Issei Suzuki², Masakatsu Hasegawa¹, Takahisa Omata², Sakiko Kawanishi¹ (1. Kyoto University (Japan), 2. Tohoku University (Japan))

[Tu2-P42-28]

Potential fluctuation at the band edge of Cu₂ZnSnS₄ thin film materials in solar cells structures investigated by photoluminescence measurements

*Soma Endo¹, Tomoki Harada¹, Tetsuo Ikari¹, Taketo Aihara², Hitoshi Tampo³, Takehiko Nagai³, Atsuhiko Fukuyama¹ (1. University of Miyazaki (Japan), 2. Japan Aerospace Exploration Agency (Japan), 3. Institute of Advanced Industrial Science and Technology (Japan))

[Tu2-P42-29]

Bandgap engineering of Zn_{1-x}Sn_xO alloy buffer layer for Cu(In,Ga)Se₂ solar cell

*Cheuk Kai Gary Kwok¹, Genchi Inohana¹, Yuta Sato¹, Muhammad Monirul Islam¹, Takeaki Sakurai¹ (1. Faculty of Pure and Applied Sciences, University of Tsukuba, Ibaraki 305-8573, Japan (Japan))

[Tu2-P42-30]

The role of Ge incorporation in pure sulfide CZTS revealed by advanced micro-to-atom scale characterizations

*Jialin Cong¹, Jialiang Huang¹, Xiaojing Hao¹ (1. University of New South Wales (Australia))

[Tu2-P42-31]

Increase in oxygen composition x of MoO_x HTL in $\text{MoO}_x/\text{BaSi}_2$ heterostructures by introduction of a-Si:H interface layers for BaSi_2 solar cells

*Yuka Fukaya¹, Nurfauzi Abdillah¹, Kaoru Toko¹, Takashi Suemasu¹ (1. University of Tsukuba (Japan))

[Tu2-P42-32]

Ag and Ge synergy in molecular ink route for bandgap tunable kesterite solar cells with high efficiency

*Romain Scaffidi^{1,2,3,4}, Yuancai Gong⁵, Alex Jiménez Arguijo⁵, Guy Brammertz^{1,2,3}, Denis Flandre⁴, Bart Vermang^{1,2,3}, Edgardo Saucedo⁵ (1. UHasselt (Belgium), 2. imec (Belgium), 3. EnergyVille (Belgium), 4. UCLouvain (Belgium), 5. UPC (Spain))

[Tu2-P42-33]

Prediction of photovoltaic properties by photoluminescence measurement through $\text{Cu}_2\text{ZnSnS}_4$ solar cell

*Jaeun Jeon¹, Takehiko Nagai¹, Yuya Ide^{1,2}, Hajime Shibata¹, Norio Terada^{1,2}, Hitoshi Tampo¹ (1. National Institute of Advanced Industrial Science and Technology (Japan), 2. Kagoshima University (Japan))

[Tu2-P42-34]

Investigating the multiple effects of Al_2O_3 interface passivation in CIGS solar cells

*Yukiko Kamikawa¹, Marco Nardone², Jiro Nishinaga¹, Shogo Ishizuka¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 2. Bowling Green State University (United States of America))

[Tu2-P42-35]

The substitution effects of Ag for Cu and Ga for In in Cu-poor phases CuIn_3Se_5 and CuIn_5Se_8 in the $\text{Cu}_2\text{Se}-\text{In}_2\text{Se}_3$ pseudo-binary system

*Taka Wada^{1,2}, Tomoya Ishida¹, Tsuyoshi Maeda¹, Yu Kawano², Takashi Minemoto² (1. Ryukoku University (Japan), 2. Ritsumeikan University (Japan))

[Tu2-P42-36]

Effect of O_2 -to-Ar gas flow ratio on the properties of sputter-deposited MoO_x HTL and its application to BaSi_2 solar cells

*Koki Hayashi¹, Takumi Sato¹, Rui Du¹, Yoichiro Koda², Masami Mesuda², Kaoru Toko¹, Takashi Suemasu¹ (1. University of Tsukuba (Japan), 2. Tosoh Corporation (Japan))

[Tu2-P42-37]

Investigation of the heat treatment conditions of Ag_8SnS_6 thin films

*Kentaro Mori¹, Hideaki Araki², Yoji Akaki¹ (1. National Institute of Technology, Miyakonojo College (Japan), 2. National Institute of Technology, Nagaoka College (Japan))

[Tu2-P42-38]

Influence of pH on fluorine incorporation into hydrothermally-synthesized tin oxide nanoparticles for applications in transparent conductive films

*Pattama Apichai^{1,2,3}, Watcharapong Pudkon⁴, Thanawat Kanlayapattamapong⁴, Piyapond Makming⁵, Kumaree Thongimboon⁴, Theerapat Arpornrat⁴, Duangmanee Wongratanaphisan⁴, Atcharawon Gardchareon⁴, Pipat Ruankham⁴ (1. 1Ph.D. Program in Nanoscience and Nanotechnology (International Program/Interdisciplinary), Faculty of Science, Chiang Mai University, Chiang Mai (Thailand), 2. Materials Science Research Center, Faculty of Science, Chiang Mai University, Chiang Mai (Thailand), 3. Department of Physics, Faculty of Science, Lampang Rajabhat University, Lampang (Thailand), 4. Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Chiang Mai (Thailand), 5. School of Renewable Energy, Maejo University, San Sai District, Chiang Mai (Thailand))

[Tu2-P42-39]

Synthesis of h-BN film for solar cells by microwave surface wave plasma CVD method

Sudip Adhikari^{1,2}, Rucheng Zhu², *Masayoshi Umeno² (1. Chubu University (Japan), 2. C's Techno. Inc. (Japan))

[Tu2-P42-40]

Fabrication of Facile and Low-cost Single Source SnS_xSe_{1-x} Thin Film Solar Cells Via Vapor Transport Deposition

*Yong Tae Kim¹, Pravin S. Pawar¹, Jaeyeong Heo¹ (1. Chonnam National University (Korea))

[Tu2-P42-41]

Comprehensive improvement in two-step deposited SnSSe thin film solar cell: roll of alkali-assisted selenium diffusion

*Parag Rajendra Patil¹, Indu Sharma¹, Yong Tae Kim¹, Jaeyeong Heo¹ (1. Chonnam National University, South Korea (Korea))

[Tu2-P42-42]

Over 20%-efficiency flexible CIGS solar cell on stainless steel substrate through diffusion barrier insertion

*Weimin Li^{1,2}, Lulu Chen^{1,3}, Xue Zheng^{1,2}, Xingchao Shao^{1,2}, Bowen Liang^{1,3}, Chunlei Yang^{1,2} (1. Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (China), 2. University of Chinese Academy of Sciences (China), 3. Department of Nano Science and Technology Institute, University of Science and Technology of China (China))

[Tu2-P42-43]

Evaluation of CdSnP₂/ZnSnP₂ Hetero-junction by Low Energy Inverse Photoelectron Spectroscopy (LEIPS)

*Maru Irei¹, Hayato Miura¹, Isshin sumiyoshi¹, Yoshitaro Nose¹ (1. Kyoto University (Japan))

[Tu2-P42-44]

CdTe Device Comparison with Other Technologies

*James Sites Sites¹, Camden Kasik¹, Ishwor Khatri¹, Marko Jost², Marko Topic² (1. Colorado State University (United States of America), 2. University of Ljubljana (Slovenia))

[Tu2-P42-45]

Influence of Ag/(In+Ga) Atomic Ration on Properties of AgInGaSe₂ Solar Cells

*Xianfeng Zhang¹, Xianwang Zhou¹, Li Zhang² (1. Guangzhou College of Technology and Business (China), 2. University of Electronic Science and Technology of China, Zhongshan Institute (China))

[Tu2-P42-46]

Analysis of performance improvement of co-evaporated CIGS photovoltaic devices with RbF post-deposition treatments

*Chia-Hua Huang¹, Yu-Chen Lin¹ (1. National Dong Hwa University (Chinese Taipei))

[Tu2-P42-47]

Influence of Substrate Temperature on The Properties of Indium Zinc Oxide Transparent Electrode

Sub area CC-2: Artificial Intelligence in PV Development | Cross Cutting Areas : Sub area CC-2: Artificial Intelligence in PV Development

📅 Tue. Nov 12, 2024 11:00 AM - 12:30 PM JST | Tue. Nov 12, 2024 2:00 AM - 3:30 AM UTC 🏛️ PS-13/Multipurpose Hall (1F)

[Tu2-Pc2] Sub area CC-2: Artificial Intelligence in PV Development

[Tu2-Pc2-01]

Numerical simulation and performance evaluation of the Sb_2Se_3 solar cell with N_iO_x as hole transport layer

Chung-Kuan Lai¹, *Yu-Jen Hung¹, Yi-Cheng Lin¹ (1. National Changhua University of Education (Chinese Taipei))

[Tu2-Pc2-02]

Non-adiabatic Molecular Dynamics Calculations Combined with Time Series Machine Learning Methods for Analysis of Intermediate Level Carrier Dynamics in Er-doped GaAs

*Yuya Makino¹, Yusuke Oteki², Yoshitaka Okada², Tomah Sogabe¹ (1. The University of Electro-Communications (Japan), 2. RCAST, The University of Tokyo (Japan))

[Tu2-Pc2-03]

Machine learning-assisted thermal evaporation for BaSi_2 absorber films

*Kosuke O. Hara¹, Ryuto Ueda¹, Takaharu Nakanishi¹, Junji Yamanaka¹, Keisuke Arimoto¹ (1. University of Yamanashi (Japan))

[Tu2-Pc2-04]

Bayesian optimization of deposition condition of Cat-CVD n-a-Si:H film

Ryota Ohashi¹, *Kentaro Kutsukake², Huynh Thi Cam Tu¹, Keisuke Ohdaira¹ (1. Japan Advanced Institute of Science and Technology (Japan), 2. Nagoya University (Japan))

[Tu2-Pc2-05]

Quick analysis of X-ray diffraction patterns through machine learning

*Kentaro Kutsukake¹, Kota Matsui¹, Ichiro Takeuchi¹, Takashi Segi², Takuo Sasaki³, Seiji Fujikawa³, Masamitsu Takahashi³ (1. Nagoya University (Japan), 2. KOBELCO RESEARCH INSTITUTE, INC. (Japan), 3. National Institutes for Quantum Science and Technology (Japan))

[Tu2-Pc2-06]

Merging machine learning sky imaging methods with the two-state model in photovoltaic power nowcasting

*Sergiu-Mihai Hategan^{1,2}, Marius Paulescu² (1. Institute for Advanced Environmental Research, West University of Timisoara (Romania), 2. Faculty of Physics, West University of Timisoara (Romania))

Sub area 3-2: Cells and Modules | Area3: Wafer-based Silicon Photovoltaics : Sub area 3-2: Cells and Modules

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[Tu3-P32] Sub area 3-2: Cells and Modules

[Tu3-P32-01]

Damp heat stability of Cat-CVD Si nitride films deposited at a high deposition rate

*Keisuke Ohdaira¹, Huynh Thi Cam Tu¹ (1. Japan Advanced Institute of Science and Technology (Japan))

[Tu3-P32-02]

Evaluation of temperature dependent stress around electrodes in crystalline silicon solar cells by Raman spectroscopy

*Koki Hasebe¹, Ryo Yokogawa^{1,4}, Kyotaro Nakamura², Yoshio Ohshita², Noboru Yamada³, Atsushi Ogura^{1,4} (1. Meiji university (Japan), 2. Toyota Technological Institute (Japan), 3. Nagaoka University of Technology (Japan), 4. Meiji Renewable Energy Laboratory, Meiji University (Japan))

[Tu3-P32-03]

Precise quantitative evaluation of series resistance mapping of crystalline solar cells in electroluminescence method

*Sakuya Yamamoto¹, Itaru Raifuku¹, Yasuaki Ishikawa¹ (1. Aoyama Gakuin University (Japan))

[Tu3-P32-04]

A Comparison of Circuit Models for Simulating and Evaluating the Current-Voltage Characteristics of PERT N-Type Bifacial Solar Cells

*Phurachaya Wiratsiri¹, Jutturit Thongpron¹ (1. Faculty of Engineering Rajamangala University of Technology Lanna (Thailand))

[Tu3-P32-05]

Singlet fission enhanced silicon solar cells: silicon surface passivation vs triplet transfer

*Jingnan (Taffy) Tong¹, Shona McNab¹, Zhangfan Qiao¹, Alex J. Baldacchino¹, Ben P. Carwithen¹, Matthew W. Brett¹, Alvin Mo¹, Yu (Victor) Zhang¹, Phoebe M. Pearce¹, Yajie (Jessica) Jiang¹, Alison M. Ciesla¹, Jon Beves¹, Bram Hoex¹, Michael Nielsen¹, Dane McCamey¹, Timothy Schmidt¹, Murad Tayebjee¹, N. J. Ekins-Daukes¹ (1. UNSW (Australia))

[Tu3-P32-06]

The layered structure concept for n-MoS₂/p-Si(c) heterojunction solar cells using TCAD Sentaurus

*ANTERDIPAN SINGH¹, PRATIMA AGARWAL¹ (1. Indian Institute of Technology Guwahati (India))

[Tu3-P32-07]

Simulation studies on n-WS₂/p-Si(c) Heterojunction Solar Cells using TCAD sentaurus

*PRATIMA AGARWAL¹, ANTERDIPAN SINGH¹, BISWAJIT DAS¹ (1. Indian Institute of Technology Guwahati (India))

[Tu3-P32-08]

Improvement in performance of dopant-free $V_2O_x/c\text{-Si}(n)$ solar cell by the application of UV-Ozone treatment

*Rahul Rahul¹, Juhi Kumari², Anterdipan Singh¹, Pratima Agarwal^{1,2} (1. Department of Physics, Indian Institute of Technology Guwahati (India), 2. School of Energy Science and Engineering, Indian Institute of Technology Guwahati (India))

[Tu3-P32-09]

Optimized Division-Conditions of Shingled Heterojunction Solar Cells by InfraRed Laser Irradiation

*EunBi Lee^{1,2}, Min-Joon Park¹, Sungmin Yoon¹, Eunae Jo¹, Kiseok Jeon¹, Minseob Kim¹, Jinho Shin¹, Yujin Kim¹, Chaehwan Jeong¹, Cheol Yeong Park¹ (1. Korea Institute of Industrial Technology (Korea), 2. Yonsei University (Korea))

[Tu3-P32-10]

Optimization and Improvement electrical and optical properties to enhance silicon heterojunction solar cell by ITO/Al₂O₃ double layer anti-reflective coating.

*Seokjin Jang¹, Muhammad Quddamah Khokhar², Sangheon Park³, Junsin Yi⁴ (1. Sungkyunkwan university (Korea), 2. Sungkyunkwan university (Korea), 3. Sungkyunkwan university (Korea), 4. Sungkyunkwan university (Korea))

[Tu3-P32-12]

Silicon solar cells using n-type tin oxide as a hole selective layer

*Tu Huynh Thi Cam¹, Keisuke Ohdaira¹ (1. Japan Advanced Institute of Science and Technology (Japan))

[Tu3-P32-13]

Silicon heterojunction solar cell with undoped tin oxide transparent electrode

*Cao Yu^{1,2}, Qiaojiao Zou³, Qi Wang², Gangqiang Dong², Xiaodan Zhang³, Xiaohong Zhang¹ (1. Soochow University (China), 2. Suzhou Maxwell Technologies Co., Ltd (China), 3. Nankai University (China))

[Tu3-P32-14]

Lifetime Enhancement of Nano-Crystalline SHJ Cells Using Heat and Light Treatments

*Maysa Sarsour¹, Fiacre Rougieux¹, Alison Ciesla¹, Chukwuka Madumelu¹, Martin Green¹, NJ Ekins-Daukes¹, Jessica Yajie Jiang¹ (1. School of Photovoltaic and Renewable Energy, UNSW (Australia))

[Tu3-P32-15]

High-performance transparent electron-selective contact for crystalline silicon solar cells

Dacheng Xu¹, *Kun Gao¹, Xinbo Yang¹ (1. College of Energy, Soochow University (China))

[Tu3-P32-16]

Passivation quality and contact resistance of tunnel nitride passivated contacts with various silicon nitride compositions

*Yuhi Ito¹, Tu Huynh Thi Cam¹, Keisuke Ohdaira¹ (1. Japan advanced institute of science and technology (Japan))

[Tu3-P32-17]

Formation of Etching Barrier by Using SiO_xN_y as Tunnel Layer in TOPCon Structure

*Mingun Kim¹, Hoyoung Song¹, Donghwan Kim¹, Hae-Seok Lee³, Yoonmook Kang³, Youngho Choe² (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Institute of Energy Technology, Korea University, Republic of Korea (Korea), 3.

Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea)

[Tu3-P32-18]

Aluminum Composition Effects in Ag/Al Paste on Local p+ Emitter Formation in p-Type Silicon Rear Junction TOPCon Solar Cells

*Yejin Gu¹, Yerin Lee¹, Dongjin Choi³, Hoyoung Song¹, MyeongSeob Sim¹, Yoonmook Kang², Youngho Choe³, Donghwan Kim¹, Hae-Seok Lee² (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 3. Institute of Energy Technology, Korea University (Korea))

[Tu3-P32-19]

The implement of silver-coated copper paste on TOPCon solar cells

*CHIH JENG HUANG¹, Chun-Ping Lin¹, Han-Chen Chang¹, Sung-Yu Chen¹ (1. Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Chinese Taipei (Chinese Taipei))

[Tu3-P32-20]

Simulation of TOPCon based back contact(TBC) solar cell using SILVACO VICTORY TCAD

*Ji-Seong Hwang¹, Youngho Choe², Yoonmook Kang³, Hae-Seok Lee³, Donghwan Kim¹ (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Institute of Energy Technology, Korea University (Korea), 3. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea))

[Tu3-P32-21]

Doping characteristics of boron-doped polysilicon in TOPCon solar cell

*SuBeom Hong¹, Dongjin Choi², Huiyeon Lee², Youngho Choe³, Hae-seok Lee¹, Donghwan Kim², Yoonmook Kang¹ (1. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea), 2. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 3. Institute of Energy Technology, Korea University, Republic of Korea (Korea))

[Tu3-P32-22]

Enhancing thermal stability of SiO_x/poly-Si passivated contacts: Investigating the impact of firing peak temperature

*Yerin Lee¹, Dongjin Choi¹, Hoyoung Song¹, Youngho Choe², Yoonmook Kang³, Hae-Seok Lee³, Donghwan Kim¹ (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Institute of Energy Technology, Korea University, Republic of Korea (Korea), 3. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea))

[Tu3-P32-23]

Bending tests and stress simulation of TOPCon solar cells cut by TLS technology: Advantages for curved PV modules

*Shunto Honda¹, Tomoya Tanimoto¹, Benjamin Lee², Steffen Geißler², Daisuke Sato¹, Noboru Yamada¹ (1. Nagaoka University of Technology (Japan), 2. Hanwha Q CELLS GmbH (Germany))

[Tu3-P32-25]

Degradation of Silicon Solar Modules Induced by Light Soaking at Elevated Temperatures: A Comparative Study of Pre-Hydrogenation and Post-Hydrogenation

*MyeongSeob Sim¹, Dongjin Choi², Youngho Choe², Yoonmook Kang³, Donghwan Kim¹, Hae-Seok Lee³ (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Institute of Energy Technology, Korea University, Republic of Korea (Korea), 3. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea))

[Tu3-P32-26]

Tolerance to potential-induced degradation for crystalline Si photovoltaic modules with Ag nanowires deposited on cell/encapsulant interface

*Asahi Yonemoto¹, Yiming Qin¹, Dhamrin Marwan², Keisuse Ohdaira³, Kazuhiro Gotoh^{1,4}, Atsushi Masuda^{1,4} (1. Grad. School Sci. Tech., Niigata University (Japan), 2. Osaka University (Japan), 3. JAIST (Japan), 4. IRCNT, Niigata University (Japan))

[Tu3-P32-27]

Mitigation of potential-induced degradation phenomena by Li element in crystalline Si photovoltaic modules

*Yiming QIN¹, Asahi Yonemoto¹, Dhamrin Marwan², Keisuke Ohdaira³, Kazuhiro Gotoh^{1,4}, Atsushi Masuda^{1,4} (1. Niigata University (Japan), 2. Osaka University (Japan), 3. JAIST (Japan), 4. IRCNT, Niigata University (Japan))

[Tu3-P32-28]

Impact of high impulse voltage on insulation of crystalline silicon photovoltaic modules

*ZEBE Thomas D'Aquin¹, Masao Isomura¹, Hanae Yamazaki², Atsushi Masuda², Tetsuya Kaneko¹ (1. Tokai University (Japan), 2. Niigata University (Japan))

[Tu3-P32-29]

Fluoropolymer layer for Snail trail prevention in c-Si PV modules

*Jaehwan Ko¹, Chungil Kim¹, Suwoon Lee¹, Jiwon Song¹, Hyung-Jun Song¹ (1. Seoul National University of Science and Technology (Korea))

[Tu3-P32-30]

Development of lightweight PV module with an aluminum composite back sheet for BIPV applications

*nopphadol sitthiphol¹ (1. National Science and Technology Development Agency (NSTDA) (Thailand))

[Tu3-P32-31]

Investigation of glassless crystalline silicon solar modules with PET film cover for high reliability in high temperatures and humidity conditions

*Tomihisa Tachibana¹, Katsuhiko Shirasawa¹, Katsuto Tanahashi¹ (1. AIST (Japan))

[Tu3-P32-32]

Highly designed photovoltaic modules using black back sheet with IR reflection

*Ryoya Okui¹, Atsushi Nakahara², Kazuhiro Gotoh^{1,3}, Atsushi Masuda^{1,3} (1. Grad. School Sci. Tech., Niigata University (Japan), 2. Dai Nippon Printing (Japan), 3. IRCNT, Niigata University (Japan))

[Tu3-P32-33]

Improvement of heat dissipation of crystalline silicon-based-solar-cell module by MgO particle mixed silicone layer

*Yuta Ninomiya¹, Eiko Shimokata¹, Keisuke Ohdaira², Atsushi Masuda³, Yasushi Sobajima¹ (1. Gifu University (Japan), 2. JAIST (Japan), 3. Niigata University (Japan))

[Tu3-P32-34]

Development of easy-to-disassemble solar PV module for environmentally friendly end-of-life handling

*Amornrat Limmanee¹, Suttinan Jaroensathainchok¹, Channarong Piromjit¹, Sampan Sivavorapan¹, Malai Wongkphabutr¹, Prathum Kungsok¹, Taweewat Krajangsang¹ (1. ENTEC, National Science and Technology Development Agency (Thailand))

[Tu3-P32-35]

Investigation of reflectance reduction structure using RCWA method for encapsulant-less Si photovoltaic module

*Shota Nakai¹, Itaru Raifuku¹, Yasuaki Ishikawa¹ (1. Aoyama Gakuin University (Japan))

[Tu3-P32-36]

Mechanical strength evaluation of curved crystalline silicon photovoltaic modules without encapsulant and cover glass

*Mitsunori Nagahara¹, Tu Huynh Thi Cam¹, Keisuke Ohdaira¹ (1. Japan Advanced Institute of Science and Technology (Japan))

[Tu3-P32-37]

Adding heat dissipation function to c-Si-based solar cell modules without encapsulants using MgO/silicone layer

*Kouzen Wakazono¹, Shinya Tsukamoto¹, Keisuke Ohdaira², Yasushi Sobajima¹ (1. Gifu university (Japan), 2. JAIST (Japan))

[Tu3-P32-38]

Noncontact and high throughput estimation for the averaged voltage of a target cell in a photovoltaic module by clamping a single wire

*Yasuyuki Kobayashi¹, Muhammad Syahir Bin Abdul Ramad¹, Hao Jiang¹ (1. Teikyo University (Japan))

[Tu3-P32-39]

Discrepancies in factory-labeled and measured STC specifications of imported photovoltaic modules in Yemen: implications for trade practices and quality assurance

*Lamees Ahmed AlQahm¹, Marwan Dhamrin (1. Yemen Standardization, Metrology and Quality Control Organization (Yemen))

[Tu3-P32-40]

Impact of data granularity on the assessment of photovoltaic module performance

*Andreea Sabadus¹, Marius Paulescu² (1. Institute for Advanced Environmental Research, West University of Timisoara (Romania), 2. Faculty of Physics, West University of Timisoara (Romania))

[Tu3-P32-42]

Degradation analysis of 38-year-old PV modules under the weather conditions of Sana'a - Yemen

*Mohammed Dahesh^{1,2}, Mohammed Al-Matwakel², Marwan Dhamrin^{3,4}, Kazuma Ito⁵, Atsushi Masuda⁵ (1. Yemen Standardization, Metrology and Quality Control Organization (Yemen), 2. Physics Department, Faculty of Science, Sana'a University (Yemen), 3. Graduate School of Engineering, Osaka University 1-1 Yamadaoka, Suita 565-0871 (Japan), 4. Toyo Aluminium K.K, 3-6-8 Kutarochi, Chuo-ku, Osaka 541-0056 (Japan), 5. Graduate School of Science and Technology, Niigata University (Japan))

[Tu3-P32-43]

Examining Two Varieties of Bifacial Solar modules for Vertical Photovoltaics Systems Across Different Orientations

*Ji Woo Sohn¹, Solhee Lee¹, Hongjun Jang², SuBeom Hong², Mingun Kim¹, Sungho Hwang², Youngho Choe³, Hae-Seok Lee², Donghwan Kim¹, Yoonmook Kang² (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea), 3. Institute of Energy Technology, Korea University, Republic of Korea (Korea))

Sub area CC-1: Perovskite Tandems | Cross Cutting Areas : Sub area CC-1: Perovskite Tandems

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[Tu3-Pc1] Sub area CC-1: Perovskite Tandems

[Tu3-Pc1-01]

Fabrication of perovskite/silicon tandem photovoltaic modules using silicone encapsulants

*Hanae Yamazaki¹, Hiromu Homma¹, Takeshi Gotanda^{2,3}, Hiroto Ohwada⁴, Kazuhiro Gotoh^{1,5}, Atsushi Masuda^{1,5} (1. Fac. Eng., Niigata Univ. (Japan), 2. Toshiba Energy Systems & Solutions (Japan), 3. Toshiba (Japan), 4. Shin-Etsu Chemical (Japan), 5. IRCNT, Niigata Univ. (Japan))

[Tu3-Pc1-02]

Fine tuning of parasitic absorption for perovskite/silicon tandem solar cells with ultra-thin C60

*Gaosheng Huang^{1,2}, Nan Sun^{1,3}, Qing Yang^{1,2}, Benjamin Klingebiel¹, Andreas Lambertz¹, Karsten Bittkau¹, Thomas Kirchartz^{1,3}, Uwe Rau^{1,2}, Kaining Ding¹ (1. Forschungszentrum Jülich (Germany), 2. RWTH Aachen University (Germany), 3. University of Duisburg-Essen (Germany))

[Tu3-Pc1-03]

The impact of nanotexture on monolithic perovskite/silicon tandem solar cells

*Nan Sun^{1,2}, Gaosheng Huang^{1,3}, Qing Yang^{1,3}, Binbin Xu^{1,3}, Andreas Lambertz¹, Karsten Bittkau¹, Thomas Kirchartz^{1,2}, Kaining Ding¹ (1. IEK-5 Photovoltaics, Forschungszentrum Jülich GmbH (Germany), 2. Faculty of Engineering and CENIDE, University of Duisburg-Essen (Germany), 3. Jülich-Aachen Research Alliance (JARA-Energy) and Faculty of Electrical Engineering and Information Technology, RWTH Aachen University (Germany))

[Tu3-Pc1-04]

Improvement of nano-texture uniformity formed on crystalline silicon surface by anisotropic alkaline etching for perovskite/silicon tandem solar cells

*Hiroto Yamaguchi¹, Shohei Fukaya¹, Yasuyoshi Kurokawa^{1,2}, Noritaka Usami^{1,2,3} (1. Graduate School of Engineering, Nagoya University (Japan), 2. Institutes of Innovation for Future Society, Nagoya University (Japan), 3. Institute of Materials and Systems for Sustainability, Nagoya University (Japan))

[Tu3-Pc1-05]

Optimizing Pyramid Size and Density in Random Texture Silicon for the Perovskite Films: Advancing High-efficiency Tandem Cells

*Jaewon Lee¹, Junyoung Jeong¹, Dowon Pyun¹, Hoyoung Song¹, Seok-Hyun Jeong¹, Haejung Lee¹, HongJun Jang¹, Sujin Cho¹, Seungtae Lee¹, Myeongji Woo¹, SuBeom Hong¹, Youngmin Kim¹, MyeongSeob Sim¹, Youngho Choe¹, Hae-Seok Lee¹, Donghwan Kim¹, Yoonmook Kang¹ (1. Korea (Korea))

[Tu3-Pc1-06]

Numerical Optimization of 2-Terminal Perovskite/Silicon Tandem Devices with Various Bottom Cell Structures

*Hoyoung Song¹, Sang-Won Lee², Youngho Choe³, Yoonmook Kang⁴, Hae-Seok Lee⁴, Donghwan Kim¹ (1. Department of Materials Science and Engineering, Korea University, Republic of Korea (Korea), 2. Department of Chemical Engineering, Stanford University, California, USA (United States of America), 3. Institute of Energy Technology, Korea University, Republic of Korea)

(Korea), 4. Graduate School of Energy and Environment (KU-KIST Green School), Korea University, Republic of Korea (Korea))

[Tu3-Pc1-07]

Nickel silicide as a recombination layer for Perovskite/TOPCon tandem solar cells

*Sujin Cho¹, Dowon Pyun¹, Yerin Lee¹, Jae-Keun Hwang¹, Seok Hyun Jeong¹, Solhee Lee¹, Wonkyu Lee¹, Ji-Seong Hwang¹, Kyunghwan Kim¹, Youngmin Kim², Sang Won Lee², Donghwan Kim¹, Youngho Choe³, Yoonmook Kang², Hae-Seok Lee² (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 3. Institute of Energy Technology, Korea University (Korea))

[Tu3-Pc1-08]

Recombination Layer for Perovskite&Silicon Tandem Solar Cells Using Nano-Ag Crystallite

*Seung Hyeon Oh¹, Hae-Seok Lee¹, Yoonmook Kang¹, Donghwan Kim³, Youngho Choe² (1. Graduate School of Energy and Environment (KU-KIST green School), Korea University (Korea), 2. Institute for Energy Technology, Korea University, Anam-ro 145, Seongbuk-gu, Seoul 02841, Republic of Korea (Korea), 3. Department of Materials Science and Engineering, Korea University, Anam-ro 145, Seongbuk-gu, Seoul 02841, Republic of Korea (Korea))

[Tu3-Pc1-09]

Hybrid evaporation-solution processes for perovskite single-junction and tandem solar cells

*Abduheber Mirzehmet^{1,3}, Calum McDonald^{1,3}, Vladimir Svrcek^{1,3}, Hitoshi Sai^{1,3}, Takurou Murakami^{2,3}, Takuya Matsui^{1,3} (1. Renewable Energy Research Center (Japan), 2. Global Zero Emission Research Center (Japan), 3. AIST (Japan))

[Tu3-Pc1-10]

Optoelectrical design of thin Cr/Au electrode for 4-terminal perovskite/silicon tandem solar cells

*Yusuke Kobata¹, Dong Chung NGUYEN^{1,2}, Itaru Raifuku¹, Yasuaki Ishikawa¹ (1. Aoyama Gakuin university (Japan), 2. Institute of Materials Science, Vietnam Academy of Sciences and Technology (Viet Nam))

[Tu3-Pc1-11]

Large area four-terminal perovskite silicon tandem solar cells with face-on oriented tripod triazatruxene hole-collecting monolayer

*Noboru Ohashi¹, Minh Anh Truong¹, Tomoya Nakamura¹, Richard Murdey¹, Kyotaro Nakamura², Yoshio Ohshita², Tappei Nishihara^{3,4}, Hyunju Lee⁴, Atsushi Ogura⁴, Noritaka Usami⁵, Kazuhiro Gotoh^{5,6}, Atsushi Masuda⁶, Yoshihiko Kanemitsu¹, Atsushi Wakamiya¹ (1. Kyoto University (Japan), 2. Toyota Technological Institute (Japan), 3. Japan Synchrotron Radiation Research Institute (Japan), 4. Meiji University (Japan), 5. Nagoya University (Japan), 6. Niigata University (Japan))

[Tu3-Pc1-12]

Hybrid PERC/TOPCon Bottom Cell Enabling Ag-free and In-free Design for Perovskite-Si Tandem Solar Cells

Hisham Nasser¹, Gokhan Altiner¹, Yigit Mert Kaplan¹, Jons Bolding², Floor Souren², Hindrik de Vries², Eni Muka¹, Berkay Uygun¹, Ayse Can¹, *Rasit Turan¹ (1. ODTÜ-GÜNAM, Middle East Technical University, 06800, Ankara (Turkey), 2. SALD B.V., Luchthavenweg 10, 5657EB, Eindhoven (Netherlands))

[Tu3-Pc1-13]

Perovskite/silicon tandem solar cells over 27% efficiency with optimized NiOx hole transport layer

Yubei Han¹, Rujie Zhang¹, Jingyu Chu¹, Liping Zhang², Zhengxin Liu², *Yiwen Zhang¹ (1. Shanghai Normal University (China), 2. Shanghai Institute of Microsystem and Information Technology (China))

[Tu3-Pc1-14]

Study of semi-transparent normal-structured perovskite solar cells for flexible perovskite/silicon tandem solar cell applications

*Daiki Haruta¹, Kimihiko Saito¹, Ryousuke Ishikawa¹ (1. Tokyo City University (Japan))

[Tu3-Pc1-15]

Engineering tungsten doped indium oxide (IWO) thin films to fabricate higher-performance silicon heterojunction bottom solar cells for the perovskite/silicon tandem solar cell application

*Hyunju Lee¹, Tappei Nishihara², Shiyu Zhang¹, Yoshio Ohshita³, Atsushi Ogura¹ (1. Meiji University (Japan), 2. Japan Synchrotron Radiation Research Institute (Japan), 3. Toyota Technological Institute (Japan))

[Tu3-Pc1-16]

Highly efficient and durable all-perovskite triple-junction solar modules: voltage matching vs. current matching

*Yasuhiko Takeda¹, Ken-ichi Yamanaka¹, Naohiko Kato¹ (1. Toyota Central R&D Labs., Inc. (Japan))

[Tu3-Pc1-17]

Unveiling the potential of Cs₂AgBiBr₆/CsSn_{0.5}Ge_{0.5}I₃-based Tandem Solar Cell

Prateek Singh Tomar¹, *Deepak Joshi¹, Vivek Garg¹ (1. Sardar Vallabhbhai National Institute of Technology (SVNIT, Surat) (India))

[Tu3-Pc1-18]

Luminescent coupling in perovskite/GaNAs tandem solar cell: numerical simulation and experimental demonstration

*Dinesh Bahadur Malla¹ (1. University of Electro-Communications (Japan))

[Tu3-Pc1-19]

Improvement of semi-transparent perovskite solar cells efficiency by preventing ITO sputtering damage

*Shohei Ryo¹, Hirotaka Sano¹, Ryo Sato¹, Xiao Liu¹, Yasuhiro Okada¹, Hiroaki Takahashi¹, Yasuhiro Matsubara¹ (1. Kyocera Corporation (Japan))

Sub area CC-3: Solar to X; Sciences, Materials and Devices | Cross Cutting Areas : Sub area CC-3: Solar to X; Sciences, Materials and Devices

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[Tu3-Pc3] Sub area CC-3: Solar to X (3); Sciences, Materials and Devices

[Tu3-Pc3-01]

Exploring Enhanced Carbon Capture: Synthesis, Characterization, and Sorption Studies of Modified UiO-66 Metal-Organic Frameworks Decorated with Plasmonic Au nanoparticles.

Alaa Elsafi Ahmed¹, Zeineb Theihmed¹, Palani Elumalai¹, Alessandro Sinopoli¹, *BRAHIM AISSA¹, Abdulkarem I. Amhamed¹ (1. Qatar Environment and Energy Research Institute (Qatar))

[Tu3-Pc3-02]

Photoelectrochemical salt-water splitting using silver and copper ions co-doping into metal organic framework photoelectrodes

*Kong-Wei Cheng¹, Shu-Hui Lin¹, Ya-Ting Syu¹ (1. Chang Gung University (Chinese Taipei))

[Tu3-Pc3-03]

Improvement of catalytic performances for air-cathode in the Zn-air batteries using nickel-cobalt selenide composite electrocatalysts

*YI-CHI LIAO¹ (1. CHANG-GENG University, Chinese Taipei (Chinese Taipei))

[Tu3-Pc3-04]

Photoelectrochemical salt-water splitting using copper doped zinc-S based metal organic framework.

*Shu-Hui Lin¹ (1. Chang Gung University (Chinese Taipei))

[Tu3-Pc3-05]

Eco-friendly Photocatalytic Removal of Synthetic Dye Wastewater using Spent Coffee Grounds (SCGs)-derived Reduced Graphene Oxide (rGO)

*Phouvnieth Phearum¹, Patiya Kemacheevakul^{1,2,3}, Surawut Chuangchote^{2,4}, Watanabe Tomohide⁵, Kubota Keiichi⁵ (1. Department of Environmental Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (Thailand), 2. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (KMUTT) (Thailand), 3. Center of Excellence on Hazardous Substance Management (HSM) (Thailand), 4. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT) (Thailand), 5. Division of Environmental Engineering Science, Gunma University (Japan))

[Tu3-Pc3-06]

Improvement of Physical Properties of Graphitic Carbon Nitride Photocatalysts for Conversion of Glucose to High-Value Chemicals

*Atita Tapo^{1,2}, Surawut Chuangchote^{1,2} (1. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT) (Thailand), 2. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (KMUTT) (Thailand))

[Tu3-Pc3-07]

Titanium-Based Metal-Organic Framework Photocatalysts for Photodegradation of Lignin Model to Produce Value-Added Chemicals

*Nattida Srisasiwimon^{1,2,3}, Surawut Chuangchote^{3,4} (1. The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok 10140. (Thailand), 2. Center for Energy Technology and Environment, Ministry of Education, 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok 10140. (Thailand), 3. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (KMUTT), 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok, 10140. (Thailand), 4. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok, 10140. (Thailand))

[Tu3-Pc3-08]

Effect for CO₂ reduction of zero-gap reactor by adding formic acid to low concentration alkali metal bicarbonate anolyte.

*Kei Morishita¹, Takeharu Murakami¹, Takeshi Matsumoto¹, Kazuki Koike^{1,2}, Katsushi Fujii¹, Takayo Ogawa¹, Satoshi Wada¹ (1. RIKEN (Japan), 2. Meiji University, Japan (Japan))

[Tu3-Pc3-09]

Effect of conditioning process for membrane and IrO₂ oxygen evolution catalyst in polymer electrolyte electrochemical cell

*Itsuka Akita¹, Katsushi Fujii^{1,2}, Takayo Ogawa², Satoshi Wada², Atsushi Ogura^{1,2,3} (1. Meiji University (Japan), 2. RIKEN RAP (Japan), 3. MREL (Japan))

[Tu3-Pc3-10]

Change in reduction products during long-time operation of electrochemical CO₂ reduction with Cu electrode

*Kazuki Koike^{1,2}, Takeharu Murakami², Kentaro Inoue¹, Takayo Ogawa², Katsushi Fujii², Satoshi Wada², Atsushi Ogura^{1,3} (1. Meiji Univ. (Japan), 2. RIKEN RAP (Japan), 3. MREL (Japan))

[Tu3-Pc3-11]

Evaluation of water transportation in anion exchange membranes used for electrochemical CO₂ reduction.

*Kentaro Inoue¹, Kazuki Koike^{1,2}, Takeharu Murakami², Kei Morishita², Takayo Ogawa², Katsushi Fujii², Satoshi Wada², Atsushi Ogura^{1,3} (1. Meiji University (Japan), 2. RIKEN RAP (Japan), 3. MREL (Japan))

[Tu3-Pc3-13]

Theoretical studies on the reaction mechanism of ammonia synthesis by lithium nitride phase

*Chinami Okamura¹, Azusa Muraoka¹, Koichi Yamashita² (1. Japan Women's University (Japan), 2. Yokohama City University (Japan))

[Tu3-Pc3-14]

Biomass-Derived Carbon-doped Strontium Titanate Perovskite Photocatalysts and Their Photocatalytic Glucose Conversions to Value-Added Chemicals

*Ahmad Said^{1,2}, Patiya Kemacheevakul^{2,3,4}, Verawat Champreda⁵, Surawut Chuangchote^{2,6} (1. The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi (Thailand), 2. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (Thailand), 3. Department of Environmental Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (Thailand), 4. Center of Excellence on Hazardous Substance Management (HSM) (Thailand), 5. National Science and Technology Development Agency (NSTDA) (Thailand),

6. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (Thailand))

[Tu3-Pc3-15]

An off-grid solar-powered carbon capture system by integration of microalgae and seashells

Yemin Thanh¹, Apatcha Satanyothin¹, Neerapat Kanbuala¹, *Methawee Nukunudompanich¹ (1. King Mongkut's Institute of Technology Ladkrabang (Thailand))

[Tu3-Pc3-16]

Effect of center atom variations in tetraalkyl-type ionic liquids on the lithium-mediated electrochemical ammonia production

*Jinwoo Chu¹, Sungbin Yang¹, Byungha Shin¹ (1. Korea Advanced Institute of Science and Technology (Korea))

[Tu3-Pc3-17]

Charge carrier recombination in TiO₂ and SrTiO₃ single crystals: impact of CoO_x cocatalyst loading

*Endong Zhang¹, Toru Takayoshi¹, Zhenhua Pan², Masashi Kato¹ (1. Nagoya Institute of Technology (Japan), 2. University of Hyogo (Japan))

[Tu3-Pc3-18]

BiVO₄ photoanode optimization using sputtering method

*youseong Park¹, jin hyeok Kim¹ (1. Chonnam National University)

[Tu3-Pc3-19]

Sonochemical conversion of alcohols to hydrogen as a complementary path for solar-to-hydrogen energy conversion

*Tomonori Kawano^{1,2}, Tatsuya Hasegawa¹, Katsunori Yanagawa¹, Katsushi Fujii², Satoshi Wada² (1. The University of Kitakyushu, 2. RIKEN Center for Advanced Photonics)

Sub area 5-2: Emerging Materials and New Concepts | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-2: Emerging Materials and New Concepts

📅 Tue. Nov 12, 2024 4:00 PM - 5:30 PM JST | Tue. Nov 12, 2024 7:00 AM - 8:30 AM UTC 🏛️ PS-13/Multipurpose Hall (1F)

[Tu4-P52] Sub area 5-2: Emerging Materials and New Concepts

[Tu4-P52-01]

Luminescent solar concentrator photovoltaics made of Zn-based semiconductor-nanoparticle-dispersed 3-aminopropyltrimethoxysilane sol-gel glass films

Keigo Awai¹, Yuki Idutsu², Jianbo Liang², DaeGwi Kim², Yong-Gu Shim², *Naoteru Shigekawa² (1. Graduate School of Engineering, Osaka City University (Japan), 2. Graduate School of Engineering, Osaka Metropolitan University (Japan))

[Tu4-P52-02]

Potential Na₂Pc+TCNQ Heterodispersed Thin Film Heterostructure for Organic Photovoltaic Applications

*Leon Hamui¹ (1. Universidad Anahuac Mexico (Mexico))

[Tu4-P52-03]

Preparation of (Mn,Fe,V)Si_y Single Crystals for Infrared Absorption Optoelectronics

*Toshiaki Chiba¹, Kei Hayashi¹, Makoto Shimizu², Yuzuru Miyazaki¹ (1. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Japan (Japan), 2. Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku University, Japan (Japan))

[Tu4-P52-04]

Improvement of characteristics of Si cells coated with thin luminescence downshifting layers

*Yuki idutsu¹, Yuki Sumimoto¹, Keigo Awai², Jianbo Liang¹, DaeGwi Kim¹, Yong-Gu Shim, Naoteru Shigekawa (1. Osaka Metropolitan University (Japan), 2. Osaka City University (Japan))

[Tu4-P52-05]

Decreasing the carrier concentration of CrSi₂ via Si adjustment and Mn substitution

*Bing Lan¹, Kei Hayashi¹, Zhicheng Huang¹, Toshiaki Chiba¹, Yuzuru Miyazaki¹ (1. Tohoku University (Japan))

[Tu4-P52-06]

Mn Doped ZnS Quantum Dots with Tunable Spectra as Efficient Down-Shifting Materials for Photovoltaics

*Hua Liang¹, Zhilong Zhang¹ (1. South China University of Technology (China))

[Tu4-P52-07]

Wavelength-Recognizable SbSI:Sb₂S₃ Photovoltaic Devices: Elucidation of the Mechanism and Modulation of their Characteristics

*Tai Kobayashi¹, Ryosuke Nishikubo^{1,2}, Yizhou Chen³, Kazuhiro Marumoto³, Akinori Saeki^{1,2} (1. Osaka University (Japan), 2. ICS-OTRI (Japan), 3. University of Tsukuba (Japan))

[Tu4-P52-08]

First-Principles Calculations on Carrier Dynamics of Ge-Doped Sn Perovskites

*Koichi Yamashita¹, Masanori Kaneko¹ (1. Yokohama City University (Japan))

[Tu4-P52-09]

Paper-thin Al-catalyzed Si nanowire photovoltaic cells and efficiency enhancement by energy transfer from Mn-doped perovskite nanocrystals

*Wipakorn Jevasuwan¹, Naoki Fukata¹ (1. National Institute for Materials Science (NIMS) (Japan))

[Tu4-P52-10]

Feature of output characteristics of InGaAs/InP heterojunction thermo-radiative diode

*Tetsuya Nakamura¹, Kentaroh Watanabe² (1. JAXA (Japan), 2. University of Tokyo (Japan))

[Tu4-P52-11]

Tunable Upconversion Luminescence Based on Quantum Dot and Organic Molecules Hybrid Materials for Photovoltaics

*Yanchao Zhao¹, Jia Luo¹, Yanhong Fan¹, Hua Liang¹, Jiajie Wu¹, Zhuang Miao¹, Shuangke Wu¹, Yaqi Gu¹, Zhilong Zhang¹ (1. School of Emergent Soft Matter, South China University of Technology, (China))

[Tu4-P52-12]

Ytterbium-Doped Perovskite Quantum Dots Glasses for Spectral Down-Conversion

*Yanhong Fan¹, Zhuang Miao¹, Shuangke Wu¹, Jiajie Wu¹, Yanchao Zhao¹, Jia Luo¹, Hua Liang¹, Zhi-Long Zhang¹ (1. School of Emergent Soft Matter, South China University of Technology (China))

[Tu4-P52-13]

Fabrication of Cu₃N thin films on MgO(100) and α -Al₂O₃(0001) substrates by reactive radio frequency magnetron sputtering: a comparative study

*Shanta Majumder¹, Miho Ohishi¹, Md Abdul Majed Patwary², Katsuhiko Saito¹, Qixin Guo¹, Tooru Tanaka¹ (1. Saga University (Japan), 2. Comilla University (Bangladesh))

[Tu4-P52-14]

An efficient down-shifting layer for silicon-based solar cells

*Jia Luo¹, Yanhong Fan¹, Yanchao Zhao¹, Jiajie Wu¹, Hua Liang¹, Miao Zhuang¹, Shuangke Wu¹, Zhilong Zhang¹ (1. South China University of Technology (China))

[Tu4-P52-15]

Insights into the Potential of Sb alloyed Cu₂AgBiI₆-based Photovoltaic Devices for Efficient Indoor Light Harvesting

Abhishek Kumar¹, *Deepak Joshi¹, Vivek Garg¹ (1. Sardar Vallabhbhai National Institute of Technology Surat (India))

[Tu4-P52-16]

Effect of P doping in ZnCdTe thin films grown by molecular beam epitaxy on GaAs(100) substrates for solar cells

Enejo Victor Sule¹, *Muhamad Mustofa¹, Katsuhiko Saito¹, Qixin Guo¹, Tooru Tanaka¹ (1. Saga University (Japan))

[Tu4-P52-17]

Overcoming the efficiency and cost barrier for large-area quantum dot photovoltaics enabled by stable semiconductive inks

*SHI GUOZHENG^{1,2}, ZEKE LIU¹, QING SHEN², WANLI MA¹ (1. Soochow university (China), 2. The University of Electro-Communications (Japan))

[Tu4-P52-18]

Photocatalytic hydrogen generation using perovskite compounds

*Keita Matsumi¹, Masahiro Fujita¹, Masahiro Rikukawa¹, Yuko Takeoka¹ (1. Sophia University (Japan))

[Tu4-P52-19]

Expanding Solar Absorption Spectrum via Upconversion Nanoparticles with ZnFe₂O₄ and TiO₂ for Improved Photoelectrochemical Reaction

*Yoongu Lim¹, Song Yeul Lee², Kyoungsuk Jin³, Yong Il Park², Uk Sim^{1,2,4} (1. Korea Institute of Energy Technology (Korea), 2. Chonnam National University (Korea), 3. Korea University (Korea), 4. NEEL Sciences, INC. (Korea))

[Tu4-P52-20]

Photoelectrochemical Nitrogen Reduction through Synergistic Interaction of MoS₂ on La₂Zr₂O₇ Nanofibers

*Yoongu Lim¹, Min Seo Yu², Kyoungsuk Jin³, Mi-Kyung Han², Uk Sim^{1,2,4} (1. Korea Institute of Energy Technology (Korea), 2. Chonnam National University (Korea), 3. Korea University (Korea), 4. NEEL Sciences, INC. (Korea))

[Tu4-P52-21]

Stability of FAPbI₃ perovskite quantum dot solar cells

*Shunkichi Hoji¹, Hua Li¹, Shuzi Hayase¹, Qing Shen¹ (1. University of Electro-Communications (Japan))

[Tu4-P52-22]

Synthesis Optimization of PbS Quantum Dot Inks for Active Layer of PbS Quantum Dot Solar Cells

*YUYAO WEI¹, Chao Ding¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications, Japan (Japan))

[Tu4-P52-23]

Ultra-Stable Zeolitic Lead Halide Perovskite Quantum Dots for Photocatalytic Hydrogen Production

*Joon Young Kim^{1,2}, Il Goo Kim¹, Pildo Jung¹, Dongjin Lee¹, Dae Jun Moon², Gyoung Hwa Jeong², Kyoungsuk Jin³, Uk Sim^{1,2} (1. NEELSCIENCES (Korea), 2. KENTECH (Korea), 3. Korea University (Korea))

[Tu4-P52-24]

Laser Deposition Parameters and Their Impact on the Physical Properties of Halide Perovskite Thin Films

Sota Fukano¹, Tomomasa Sato¹, *Nobuyuki Matsuki¹ (1. Kanagawa University (Japan))

[Tu4-P52-25]

Bifacial efficiency estimation of Cs₃Sb₂I₉ - based indoor bifacial perovskite solar cell

*Rajesh Kumar Sharma¹, Mohammad Ayan Khan¹, Vivek Garg¹, Shivendra Yadav¹ (1. Sardar Vallabhbhai National Institute of Technology, Surat (India))

[Tu4-P52-26]

Stable Inorganic Colloidal Tin and Tin-Lead Perovskite Nanocrystals with Ultra-Long Carrier Lifetime via Sn (IV) Control

*Yusheng Li¹, Dandan Wang¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications (Japan))

[Tu4-P52-27]

Accurate bandgap prediction of CsSnI₃-xBr_x perovskite for photovoltaic applications using DFT

*Dhruv Singh Thakur¹, Vivek Garg¹, Shivendra Yadav¹ (1. Sardar Vallabhbhai National Institute of Technology, Surat (India))

[Tu4-P52-28]

Optical Properties in Mixed Tin-Lead Perovskite Nanocrystals

*Dandan Wang¹, Yusheng Li¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications (Japan))

[Tu4-P52-29]

In-situ epitaxial growth of 2D-3D perovskite nanocrystal heterojunction inks

*Yongge Yang¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications (Japan))

[Tu4-P52-30]

Advanced Near-Infrared Organic Photoplethysmography Sensors: Enhancing Performance through Optical Cavity Modulation in the Photosensitive Layer

*Byung Gi Kim¹, Zhao Yang², Woongsik Jang¹, Dong Hwan Wang^{1,2} (1. Department of Intelligent Semiconductor Engineering, Chung-Ang University (Korea), 2. School of Integrative Engineering, Chug-Ang University (Korea))

[Tu4-P52-31]

Cylindrical PV for next generation solar cells

*Daisuke Hirotsu¹, Daishiro Nomura¹, Toshihiro Takenoya¹, Yuya Sono¹, Takatoshi Nomura², Masahiro Hayashi², Masaki Nakamura³, Tomoyuki Hirami³, Shuzi Hayase⁴ (1. FUJICO Co.,LTD (Japan), 2. CKD Corporation (Japan), 3. Ushio INC. (Japan), 4. University of Electro-Communication (Japan))

[Tu4-P52-32]

Innovative Synthesis and Functionalization of Cu and AuCu Nanoparticles for Enhanced SERS and Catalytic Applications

*MEI-YI LIAO¹ (1. National Pingtung University (Chinese Taipei))

[Tu4-P52-33]

Development of Pb-free perovskite solar cells

*Tingli Ma¹ (1. Kyushu Institute of Technology (Japan))

[Tu4-P52-35]

Investigation of defect reduction and hydrogen diffusion in Si/SiO₂ multilayer films by hydrogen radical treatment

*Shigeru Yamada¹, Naoki Matsuo¹, Tomohiro Deto¹, Tomoki Fujisawa¹, Yuto Ebata¹, Yuki Nishi¹, Takashi Itoh¹ (1. Gifu University (Japan))

[Tu4-P52-36]

Photovoltaic Properties and Stability of Lead Sulfide / Zinc Oxide Heterojunction Solar Cells Using Small Dicarboxylic Acids Ligand for the Hole Transport Layer

*Koichi Tamaki¹, Haibin Wang¹, Xiaoxiao Mi¹, Naoyuki Shibayama², Ryota Jono^{1,3}, Takaya Kubo¹, Hiroshi Segawa¹ (1. The University of Tokyo (UTokyo) (Japan), 2. Toin University of Yokohama (Japan), 3. Research Organization for Information Science and Technology (RIST) (Japan))

[Tu4-P52-37]

Mist CVD High-k $Al_xM_{1-x}O_y$ (M=Al, Hf) for Improved Interfaces in 2D Layer Materials (WSe₂ and GaS)-based Optoelectronics

*Abdul Kuddus¹, Keiji Ueno², Hajime Shirai², Shinichiro Mouri¹ (1. Ritsumeikan University bkc (Japan), 2. Saitama University (Japan))

[Tu4-P52-38]

Effect of *n*-type window layer materials on two-step photon absorption current in ZnTeO-based intermediate band solar cells

*Yuta Suetugu¹, Katsuhiko Saito¹, Qixin Guo¹, Tooru Tanaka¹ (1. Saga university (Japan))

[Tu4-P52-39]

Effects of mirrors attached to sides of luminescence downshifting layers on Si solar cells

*Yuki Sumimoto¹, Yuki Idutsu¹, Keigo Awai², Jianbo Liang¹, Naoteru Shigekawa¹ (1. Osaka Metropolitan University (Japan), 2. Osaka City University (Japan))

[Tu4-P52-40]

Demonstration of thermoradiative power conversion from InAsSb based mid-infrared light emitting diodes

*Muhammad Waleed Akram¹, Naoya Sagawa¹, Shuhei Yagi¹, Hiroyuki Yaguchi¹ (1. Saitama University Japan (Japan))

[Tu4-P52-41]

Improved performances of wide-gap perovskite solar cells via efficient hole transport layer based on I-III-VI QD solids

*XUE ZHENG¹, Xia Chen¹, Chunlei Yang¹, Jie Zhang¹ (1. Shenzhen Insitute of Advanced Technology, Chinese Academy of Sciences)

[Tu4-P52-42]

Formation of SiGe/Si PN heterojunction by Screen-Printing Aluminum Paste and Germanium Source

*Kaito Kitaura¹, Sarah Alamri¹, Shota Suzuki², Takashi Kuroki², Moeko Matsubara², Hideaki Minamiyama², Masakazu Tane¹, Jun Tatebayashi¹, Marwan Dhamrin² (1. Osaka University, 2. Toyo Aluminum K.K.)

Sub area 1-2: Grid Integration and Energy Management | Area1: PV in Sustainable Energy System : Sub area 1-2: Grid Integration and Energy Management

🏠 Thu. Nov 14, 2024 9:00 AM - 10:30 AM JST | Thu. Nov 14, 2024 12:00 AM - 1:30 AM UTC 🏠 PS-12/Multipurpose Hall (1F)

[Th1-P12] Sub area 1-2: Grid Integration and Energy Management

[Th1-P12-01]

Comparison of Model Predictive Control and Heuristics in Building Energy Management with Photovoltaic

*Alexander Blinn¹, Ulrich Kue¹, Fabian Kennel¹ (1. Environmental Campus Birkenfeld, Trier University of Applied Sciences (Germany))

[Th1-P12-02]

Deep Learning-based Short-term Solar Forecasting Starting at Nighttime

Jun Sasaki¹, *Kenji Utsunomiya¹, Maki Okada¹, Koji Yamagichi¹ (1. Japan Weather Association (Japan))

[Th1-P12-03]

Fully covered photovoltaic thermal (PVT) collector coupled with vapour absorption refrigeration (VAR) system: a comparative study

Abhshek Tiwari¹, *Shruti Aggarwal¹ (1. Guru Gobind Singh Indraprastha University (India))

[Th1-P12-04]

Meteonorm Version 9.0

*Jan Remund¹, Pascal Graf¹, Michael Schmutz¹, David Schweizer¹, Mathias Aschwanden¹, David Urwyler¹, Gerhard Zaugg¹ (1. Meteotest AG (Switzerland))

[Th1-P12-05]

Using Algorithm for Simulation Attenuating Harmonic Currents in the Power System to Protect the Inverter 3 - phase Grid Connected under Distorted Voltage Conditions

Worrajak muangjai Muangjai¹, *Thanet Phugun¹, Anon Namin¹, Kan Nakaiam¹, Kittinun Srasuay¹, Kosol Oranpiroj¹, Nopporn Patcharaprakiti¹, Nattawat Panlawan¹, Wiwat Tippachon¹, Teerasak Somsak¹, Surasak Yousawat¹, Jutturit Thongpron¹ (1. Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-06]

Techno-economics Investigation of Microgrid Hybrid PV-Battery and Diesel Generator System: Khlong Ruea Thailand

Teerasak Somsak², *Montri Ngao-det¹ (1. Faculty of Engineering, Rajamangala University of Technology Lanna (Thailand), 2. College of Integrated Science and Technology, Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-07]

Photovoltaic based electrification of parking area with electrical vehicle charging station

*Shafiqur Rehman A.A. Hafez Waliullah¹, Abdul Baseer Mohammed² (1. King Fahd University of Petroleum & Minerals (Saudi Arabia), 2. School of Engineering & Computing, Mechanical Engineering Department, American International University (Kuwait))

[Th1-P12-08]

Comparative Analysis of Techno-economics of Supercapacitor, Battery-supercapacitor, and Direct of Photovoltaic Water Pumping System

Teerasak Somsak², *Kan Nakaia¹ (1. Faculty of Engineering, Rajamangala University of Technology Lanna (Thailand), 2. College of Integrated Science and Technology, Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-09]

Optimizing Peak Shaving with Lithium Batteries by ARIMA-Based Predictive Modeling

surasak yousawat¹, *Kan Nakaia¹ (1. Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-10]

A design and development of a 48-volt solar charging system for electric golf cart with carbon zero emissions

*Kittinun Srasuay¹, Nopporn Patcharaprakiti¹ (1. Faculty of Engineering, Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-11]

Real-time Measuring and Monitor Photovoltaic Water Pumping System Performance and Detecting Alarm Abnormalities

*Nattawat Panlawan¹, Wasin Aiaoheng¹ (1. Faculty of Engineering, Rajamangala University of Technology Lanna (Thailand))

[Th1-P12-12]

Integrating Machine Learning to Forecast Electrical Characteristics of Dust-Affected Monocrystalline Silicon Solar Cells for Sustainable Energy Solutions

Prakaykaew Boottarat¹, Chonlatee Photong², *Sarinya Sala-ngam² (1. Faculty of Engineering, Sakon Nakhon Rajabhat University (Thailand), 2. Faculty of Engineering, Mahasarakham University (Thailand))

[Th1-P12-13]

Day-ahead forecasting of regional PV power generation by Auto-Encoder with meteorological elements on multiple pressure surfaces

*Yusuke Mori¹, Shinji Wakao¹, Hideaki Ohtake², Takahiro Takamatsu², Takashi Oozeki² (1. Waseda University (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan))

[Th1-P12-14]

Short-term fluctuations forecasting of photovoltaic power generation based on LSTM

*Xue Fang¹, Jindan Cui¹, Kenji Utsunomiya², Jun Sasaki², Maki Okada², Koji Yamaguchi², Yuzuru Ueda¹ (1. Tokyo University of Science (Japan), 2. Japan Weather Association (Japan))

[Th1-P12-15]

Analysis of the impact of data windowing on LSTM-based PV power generation forecasting

*Chamnan Limsakul¹, Anawach Sangswang¹ (1. King Mongkut's University of Technology Thonburi (Thailand))

[Th1-P12-16]

The fourth edition of the best practices handbook for the collection and use of solar resource data

*Manajit Sengupta¹, Aron Habte¹, Elke Lorenz², Christian Gueymard³, Adam R Jensen⁴, Jan Remund⁵, Wilfried Van Sark⁶, Stefan Wilbert⁷ (1. National Renewable Energy Laboratory (United States of America), 2. Fraunhofer Institute for Solar Energy Systems (Germany), 3. Solar

Consulting Services (United States of America), 4. Technical University of Denmark (Denmark), 5. Meteotest (Switzerland), 6. Utrecht University (Netherlands), 7. DLR (Spain))

[Th1-P12-17]

The National Climate Database (NCDB): an unbiased 100-year dataset for PV modeling

*Manajit Sengupta¹, Jaemo Yang¹, Aron Habte¹, Yu Xie¹, Douglas Nychka², Maggie Bailey², Soutir Bandyopadhyay² (1. National Renewable Energy Laboratory (United States of America), 2. Colorado School of Mines (United States of America))

[Th1-P12-18]

Development of a MEPS forecasting method for creating large ensemble predictions based on the MEPS

*Shuntaro Nakayama¹, Hideaki Ohtake¹, Takahiro Takamatsu¹, Takashi Oozeki¹ (1. National Institute of Advanced Industrial Science and Technology (Japan))

[Th1-P12-19]

Estimation of Charging Load Reduction Effects by Vehicle-Integrated Photovoltaics Based on Road Traffic Census Data

*Ryotaro Kawafuchi¹, Ryuto Shigenobu¹, Akiko Takahashi¹, Masakazu Ito¹, Oda Takuya² (1. University of Fukui (Japan), 2. University of Kitakyushu (Japan))

[Th1-P12-20]

Estimation of confidence intervals for short-term solar irradiance forecasts

*Masahiro Sawada¹, Kenji Utsunomiya¹, Jun Sasaki¹, Maki Okada¹, Koji Yamaguchi¹ (1. Japan Weather Association (Japan))

[Th1-P12-21]

Application of nonlinear Kalman filter as postprocessing of solar irradiance prediction with numerical weather model

Perawut Chinnavornrungssee¹, Nuwong Chollacoop¹, Sasiwimon Songtra², Kobsak Sriprapha², Jun Yoshino³, *Tomonao Kobayashi³ (1. National Energy Technology Center (Thailand), 2. National Electronics and Computer Technology Center (Thailand), 3. Gifu University (Japan))

[Th1-P12-22]

Comparison of ensemble forecasting of solar irradiance with different number of ensemble member

Perawut Chinnavornrungssee¹, Nuwong Chollacoop¹, Sasiwimon Songtra², Kobsak Sriprapha², Jun Yoshino³, *Tomonao Kobayashi³ (1. National Energy Technology Center (Thailand), 2. National Electronics and Computer Technology Center (Thailand), 3. Gifu University (Japan))

[Th1-P12-23]

Optimal operation plan for BESS to reduce electricity costs in factory with PV

*Shota Okazaki¹, Akiko Takahashi¹, Ryuto Shigenobu¹, Masakazu Ito¹ (1. University of Fukui (Japan))

[Th1-P12-24]

Application of k-fold cross validation in photovoltaic power generation forecasting using LSTM Networks

*Chamnan Limsakul¹, Anawach Sangswang¹ (1. King Mongkut's University of Technology Thonburi (Thailand))

[Th1-P12-25]

Study on requirements for hydrogen production facilities and related control methods to achieve carbon neutrality

*Hiroyu Sudo¹, Chiyori T. Urabe¹, Takeyoshi Kato¹ (1. Nagoya University (Japan))

[Th1-P12-26]

Development of Error Absorption Headroom Setting Algorithm Using Bivariate Polynomial Surface to Create Reserve Power in A PV Power Plant

*Jindan Cui¹, Xue Fang¹, Takashi Oozeki², Yuzuru Ueda¹ (1. Tokyo University of Science (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan))

[Th1-P12-27]

Assessment of Power Flow and Voltage under Distributed Energy Resources Utilization for Mitigation of Congestion at Distribution Network Substations

*Akihisa Kaneko¹, Hiroshi Suwa¹, Yutaka Iino¹, Yu Fujimoto¹, Hideo Ishii¹, Yasuhiro Hayashi¹ (1. Waseda University (Japan))

[Th1-P12-28]

Evaluation of The Economics of The Green Base Transceiver Stations by Participating in DR focused on The Capacity Market

*Takayuki Hirano¹, Shinji Wakao¹, Fumiaki Igarashi², Masaki Nakamura² (1. Waseda University (Japan), 2. NTT DOCOMO, Inc. (Japan))

[Th1-P12-29]

Time series analysis of PV power generation with shading losses and weather effects using GIS

*Taiju Igarashi¹, Jindan Cui¹, Yuzuru Ueda¹ (1. Tokyo University of Science (Japan))

[Th1-P12-30]

Optimal Sizing and Placement of Diesel Generators, PVs, and BESS for Islanded Microgrid Electrification: Economic and Operational Considerations

*Piyapath Siratarnsophon¹, Kulwadee Somboonviwat¹, Pairote Thongprasri¹, Umarin Sangpanich¹ (1. Faculty of Engineering at Sriracha, Kasetsart University (Thailand))

[Th1-P12-31]

Multivariate Time Series Clustering for Determining Representative Load and PV Generation Profiles for Robust Energy System Analysis and Design

*Kulwadee Somboonviwat¹, Piyapath Siratarnsophon¹, Roongrojana Songprakorp², Umarin Sangpanich¹ (1. Faculty of Engineering at Sriracha, Kasetsart University (Thailand), 2. School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi, Thailand (Thailand))

[Th1-P12-33]

GIS-based Electric Vehicle Charging Station Placement with integration of Renewable Energy

Jiyoon Ku¹, *Hyeong-Dong Park^{2,3} (1. Department of Energy Systems Engineering, Seoul National University (Korea), 2. Department of Energy Resources Engineering, Seoul National University (Korea), 3. Research Institute of Energy and Resources, Seoul National University (Korea))

[Th1-P12-34]

Evaluation of irradiance transposition models for PV performance under hot desert conditions

*Abdul Wahab Ziaullah¹, Dunia Bachour Bachour¹, Daniel Perez-Astudillo¹ (1. Qatar Environment and Energy Research Institute)

Sub area 1-3: Green Energy Carriers and Storage | Area1: PV in Sustainable Energy System : Sub area 1-3:
Green Energy Carriers and Storage

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[Th1-P13] Sub area 1-3: Green Energy Carriers and Storage

[Th1-P13-01]

Extension of Battery Lifespan for Small Off-grid PV System with Equipped Generator Controller

*Aswin Hongsingthong¹, Bancha Janthong², Rangson Pluemkamon¹, Saifon Kotesopa¹, Nuttakarn Udomdachanut¹, Amornrat Limmanee¹, Natee Thong-Un² (1. National Energy Technology Center (ENTEC), National Science and Technology Development Agency (NSTDA) (Thailand), 2. Department of Engineering, King Mongkut's University of Technology North Bangkok (Thailand))

[Th1-P13-02]

Performance analysis of sand-based solar geyser integrated with photovoltaic panel

Dinesh Kumar Saini¹, *Avadhesh Yadav¹ (1. National institute of Solar Energy (India))

[Th1-P13-03]

Thermal and flammability of 1-Butyl-2,3-Dimethylimidazolium Bromide(BMI-Br) composite polymer electrolytes for Li-metal batteries

*Jae Hyun KIM Kim¹ (1. DGIST (Korea))

Sub area 4-1: Organic and Inorganic Photovoltaics | Area4: Thin-film Photovoltaics and Modules : Sub area 4-1: Organic and Inorganic Photovoltaics

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[Th1-P41] Sub area 4-1: Organic and Inorganic Photovoltaics

[Th1-P41-01]

Identification of the scribe related process variations in flexible amorphous silicon solar foils using EL imaging

*Peer Johannes Theodore Sluijs¹, Sreejith Koorthedath Pullayikody¹, Ravi Vasudevan², Arno Smets¹ (1. Delft University of Technology (Netherlands), 2. HyET Solar B.V. (Netherlands))

[Th1-P41-02]

A broad band light trapper quasi-periodic silicon inverted-pyramid arrays synthesized by lithography free method for high efficiency thin silicon solar cells

*Anil Kumar¹, Divya Rani², Anjali Saini³, Neeraj Joshi⁴, Ravi Kumar Varma⁵, Mrinal Dutta⁶, Arup Samanta⁷ (1. Student (India), 2. Student (India), 3. Student (India), 4. Student (India), 5. Student (India), 6. Deputy Director (India), 7. Professor (India))

[Th1-P41-03]

Formation of 2µm-thick 10µm-wide (001) Si stripes without twin boundary and random grain boundary on SiO₂ substrate for solar cell application

*Ryota Nosu¹, Koyo Takimoto¹, Hanabi Takahashi¹, Wenchang Yeh¹ (1. Shimane University (Japan))

[Th1-P41-04]

Simulation studies on optimization of Antireflection coating for n-MoS₂/c-Si (p) heterojunction solar cells

*ANTERDIPAN SINGH¹, PRATIMA AGARWAL¹ (1. Indian Institute of Technology Guwahati (India))

[Th1-P41-05]

Structural, phonon, and optical characterizations of hafnium oxynitride thin films for hot carrier properties

*Ayush Pratik¹, Gavin Conibeer², Santosh Shrestha² (1. PhD Student (Australia), 2. Professor (Australia))

[Th1-P41-06]

High Quality Fluorine-Doped Tin Oxide Film (FTO) with 300 mm Square Prepared by Intermittent Spray Pyrolysis Deposition

*Shoji Kaneko¹, Shunichi Ohta¹, P. Viraj Jayaweera¹ (1. SPD Laboratory, Inc. (Japan))

[Th1-P41-07]

A COMPUTATIONAL STUDY ON THE EFFECT OF LENGTH DISPERSITY IN NANOWIRE-BASED TRANSPARENT ELECTRODES

Yugam Bharti¹, *Shruti Aggarwal¹, Vikas Malik² (1. Guru Gobind Singh Indraprastha University (India), 2. Jaypee Institute of Information Technology (India))

[Th1-P41-08]

Fabrication and characterization of IGZO/Al/IGZO sandwich structure for p-Si solar cells

*Tung-Lin Kuo¹, Chen-Hsu Tai¹, Chih-Chun Chuang¹, Yu-Hsuan Chang¹, Hong-Shi Liu¹, Chi-Da Yang¹, Jia-Hao Lin², Yu-Hung Chen¹ (1. National Kaohsiung University of Science and Technology, Kaohsiung, Chinese Taipei (Chinese Taipei), 2. Opto-Electronics Technology Section Energy and Agile System Department, Metal Industries Research & Development Centre, Kaohsiung, Chinese Taipei (Chinese Taipei))

[Th1-P41-09]

Comparison of effects of ZnO and IGZO as window layer on performance of Si solar cells

*Yu-Hung Chen¹, Hong-Shi Liu², Jia-Hao Lin³ (1. National Kaohsiung University of Science and Technology (NKUST) (Chinese Taipei), 2. National Kaohsiung University of Science and Technology (NKUST) (Chinese Taipei), 3. Metal Industries Research & Development Centre (Chinese Taipei))

[Th1-P41-10]

Perovskite solar cell modules: revealing main degradation mechanisms under high-temperature and damp-heat conditions

*Abdurashid Mavlonov¹, Hiroki Mori¹, Navapat Krobkrong¹, Tomohiko Hara¹, Yoshihiro Hishikawa¹, Takayuki Negami¹, Yu Kawano¹, Akinobu Hayakawa², Takashi Minemoto¹ (1. Ritsumeikan University (Japan), 2. Sekisui Chemical Co., Ltd. (Japan))

[Th1-P41-11]

The behavior of methylammonium lead iodide-based perovskite solar cell module under the partial-shading condition

*Tomohiko Hara¹, Toshiya Yasuda¹, Hiroki Mori¹, Navapat Krobkrong¹, Yoshihiro Hishikawa¹, Abdurashid Mavlonov¹, Yu Kawano¹, Akinobu Hayakawa², Takashi Minemoto¹ (1. Ritsumeikan University (Japan), 2. Sekicui chemical Co. Ltd. (Japan))

[Th1-P41-12]

Ambient-air processed perovskite CsPbBr₃ thin films for solar cell applications

*Xorell Ivanov Monov¹, Prima Fitri Rusliani¹, Shobih Shobih², Natalita Maulani Nursam², Brian Yulianto¹, Wilman Septina² (1. Bandung Institute of Technology (Indonesia), 2. National Research and Innovation Agency (Indonesia))

[Th1-P41-13]

Pt-free polymeric electrocatalysts for dye-sensitized solar cells

Kyumi Han¹, *Hyunwoong Seo¹ (1. Inje University (Korea))

[Th1-P41-14]

Dye-Sensitized Solar Cells Based on Near-infrared Absorbing Heptamethine Cyanine Dye with the Diphenylamino Groups

*Hiroki Masuoka¹, Kazuhiro Manseki¹, Yasuhiro Kubota¹, Toshiyasu Inuzuka¹, Takashi Sugiura¹, Kazumasa Funabiki¹ (1. Gifu University (Japan))

[Th1-P41-15]

Development of simple structure p-type polymers for solar cells based on a design through machine learning

*Shogo Tadokoro¹, Fumitaka Ishiwari¹, Akinori Saeki¹ (1. Graduate School of Engineering, Osaka University. (Japan))

[Th1-P41-16]

Development of semiconducting polymers incorporating novel thiazole-containing π -extended fused rings for organic photovoltaics

*Mayu Tomita¹, Hiroto Iwasaki¹, Kodai Yamanaka¹, Tubasa Mikie¹, Itaru Osaka¹ (1. Graduate School of Advanced Science and Engineering, Hiroshima University (Japan))

[Th1-P41-17]

Synthesis of Diketopyrrolopyrrole-based Copolymers for Binary and Ternary Blend Organic Photovoltaics

*Ryosuke Kamimura¹, Fumitaka Ishiwari¹, Akinori Saeki¹ (1. Graduate School of Engineering, Osaka University (Japan))

[Th1-P41-18]

Development of a Nonfullerene Acceptor Based on a New Ladder-Type DAD π -Framework

*Risa Ueda¹, Tsubasa Mikie¹, Masahiko Saito¹, Itaru Osaka¹ (1. Hiroshima University (Japan))

[Th1-P41-19]

Improvement of Non-fullerene Organic Solar Cells by Using the Localized Surface Plasmon Resonance Effect of Metal Nanoparticles

*YUTING MIAO¹, Sachiko Jonai¹, Kazunari Shinbo¹, Keizo Kato¹, Akira Baba¹ (1. Niigata University (Japan))

[Th1-P41-20]

Enhancing efficiency of non-fullerene organic solar cells via volatilizable solid additive system

*Walia Binte Tarique¹, Shahriyar Safat Dipta¹, Ashraful Hossain Howlader¹, Ashraf Uddin¹ (1. University of New South Wales (Australia))

[Th1-P41-21]

Theoretical study on optical absorption properties and charge transfer of NTz-based non-fullerene acceptor molecules

*Haruka Araragi¹, Seihou Jinnai², Yutaka Ie², Azusa Muraoka¹ (1. Graduate School of Science, Japan Women's University (Japan), 2. The institute of Scientific and Industrial Research, Osaka University (Japan))

[Th1-P41-22]

Analysis of charge states in non-fullerene organic solar cells by ESR spectroscopy

*Atsushi Sato¹, Seira Yamaguchi^{1,2}, Kaito Inoue¹, Masahiko Saito³, Itaru Osaka³, Kazuhiro Marumoto^{1,2,4} (1. Department of Material Science, University of Tsukuba (Japan), 2. OIQST, University of Tsukuba (Japan), 3. Hiroshima University (Japan), 4. TREMS, University of Tsukuba (Japan))

[Th1-P41-23]

A Dibenzo[*g,p*]chrysene-Based Organic Semiconductors with Small Exciton Binding Energy

Hiroki Mori¹, *Seihou Jinnai¹, Yasushi Hosoda¹, Yutaka Ie¹ (1. Osaka University (Japan))

[Th1-P41-24]

Hydrogen-bonding interactions among terpolymers enhance the efficiency and stability of non-halogenated solvent-processed polymer solar cells.

*Fiza Arshad^{1,2}, Muhammad Haris^{1,2}, Zakir Ullah³, Chang Eun Song^{1,2}, Won Suk Shin^{1,2}, Hyung-Wook Kwon³ (1. Korea Research Institute Of Chemical Technology (Korea), 2. University of Science and Technology (Korea), 3. Incheon National University (Korea))

[Th1-P41-25]

Crosslinking-Integrated Sequential Deposition: A Method for Efficient and Reproducible Bulk Heterojunctions in Organic Solar Cells

*Yeji Na¹, Hyunkyong Kim¹, Kyungkon Kim¹ (1. EWHA WOMANS UNIVERSITY (Korea))

[Th1-P41-26]

Synergistic Enhancement of Inverted polymer Solar Cell characteristics using ZnO/Ti₃C₂ as Electron Transport Layer

*Anamika Kem¹, Koteswara Rao Peta¹ (1. University of Delhi (India))

[Th1-P41-27]

Organic solar cells with lead sulfide quantum dots as solid additives

*Kei Takahashi¹, Yuyao Wei¹, Chao Ding¹, Taro Toyoda¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications (Japan))

[Th1-P41-28]

Agave cantala nanocellulose – cyclic olefin copolymer composite as moisture encapsulation for solar cell devices

*Bernice Mae YU JECO-ESPALDON¹, Kendra Felizimarie MAGSICO¹, Erwin SUMARAGO³, Myeongok KIM², Yoshitaka OKADA¹, Noel Peter TAN¹ (1. University of San Agustin (Philippines), 2. The University of Tokyo (Japan), 3. University of San Carlos (Philippines))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

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[Th1-P51] Sub area 5-1: Perovskite Photovoltaics

[Th1-P51-01]

Enhancing Perovskite Solar Cell Performance through Chemical Bath Deposition of SnO₂ on Mesoporous TiO₂ Electrodes

*Wei-Hao Chiu¹, Kun-Mu Lee¹ (1. Chang Gung University (Chinese Taipei))

[Th1-P51-02]

Degradation of perovskite solar cells due to pinholes transforming into current leakage points

*Tatsuro Kawamura¹, Tamotsu Horiuchi¹, Yasuaki Ishikawa² (1. EneCoat Technologies Co.,Ltd. (Japan), 2. Aoyama Gakuin University (Japan))

[Th1-P51-03]

Defect states and photoelectric conversion efficiency in CH₃NH₃PbI₃ solar cells by varying the application time of antisolvents

Kyoung Su Lee¹, Jaewon Oh², Hyunbok Lee², Mee-Yi Ryu², *Eun Kyu Kim¹ (1. Hanyang University (Korea), 2. Kangwon National University (Korea))

[Th1-P51-05]

Large Scale Equipment Technology for Uniform Perovskite Crystals via Slot-Die Coating and Vacuum Drying

*Takayuki Miyoshi¹, Katsumi Araki¹, Toshiaki Ikada¹, Toshifumi Ito¹, Hisayoshi Tajima¹, Toyoharu Terada¹, Mitsuhiro Shigeta², Hiroki Mori², Yu Kawano², Takashi Minemoto² (1. Toray Engineering Co., Ltd. (Japan), 2. Ritsumeikan University (Japan))

[Th1-P51-06]

Development of stable pure iodide wide bandgap perovskite for Si based tandem solar cells

*MINGRUI HE¹, Zhen Li¹, Xiaojing Hao¹ (1. The University of New South Wales (Australia))

[Th1-P51-07]

Dopant-free spiro-type hole-transporting materials by short-step synthesis for efficient and stable perovskite solar cells

*Nobuko Onozawa-Komatsuzaki¹, Daisuke Tsuchiya², Shinichi Inoue², Atsushi Kogo¹, Takurou N. Murakami¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 2. Nippon Fine Chemical Co., Ltd. (Japan))

[Th1-P51-08]

Controllable acceleration and deceleration of charge carrier transport in metal-halide perovskites

*Mehri Ghasemi¹, Yurou Zhang², Baohua Jia¹, Xiaoming Wen¹ (1. RMIT university (Australia), 2. University of Queensland (Australia))

[Th1-P51-09]

Effect of post-annealing treatment on lead-free bismuth-based solar cells

*Aditya Wahyu Anugrah¹, Itaru Raifuku^{1,2}, Hidenori Kawanishi¹, Yukiharu Uraoka¹ (1. Nara Institute of Science and Technology (Japan), 2. Aoyama Gakuin Institute University (Japan))

[Th1-P51-10]

Morphology Control Additive in Vacuum-Deposited Perovskite Solar Cells

*Yerim Kim¹, Kyungkon Kim¹ (1. Ewha Womans Universtiy (Korea))

[Th1-P51-11]

Reducing plasma damage in bifacial perovskite solar cells and analyzing the double-sided light incident characteristics of environmental simulation

Ming-Xun Jiang¹, *HSIU-CHEN KE¹, Chen-Fu Lin¹, Peter Chen¹ (1. National Cheng Kung University (Chinese Taipei))

[Th1-P51-12]

Fabrication of Flexible Perovskite Solar Cells on Stickable-Removable Substrates

*Wassana Lekkla^{1,2}, Taweewat Krajangsang³, Surawut Chungchote^{1,2} (1. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), 126 Prachauthit Rd., Bangmod, Thungkru, Bangkok 10140, Thailand. (Thailand), 2. Research Center of Advanced Materials for Energy and Environmental Technology (MEET), King Mongkut's University of Technology Thonburi (KMUTT) (Thailand), 3. Solar Photovoltaic Research Team, National Energy Technology Center (ENTEC), National Science and Technology Development Agency (NSTDA) (Thailand))

[Th1-P51-14]

Fabrication of BaZrS₃ thin film by spin coating of nanoparticles for solar cell absorber

*Mitsuki Yamanishi¹, YOSHINORI KIMOTO², ISSEI TAKENAKA², TAKUYA KATOU², HIROAKI NAKAMURA², TAKAHIRO WADA¹, RIKU TEGANE¹, YU KAWANO¹, TKASHI MINEMOTO¹ (1. Ritsumeikan University (Japan), 2. Idemitsu Kosan Company (Japan))

[Th1-P51-16]

Enhancing the photovoltaic conversion efficiency of perovskite solar cells through interface engineering using chelating molecules

*Hong-Yi Lin¹, Kai-Chi Hsiao¹, Ting-Han Lin¹, Kun-Mu Lee¹, Ming-Chung Wu¹ (1. Chang Gung University (Chinese Taipei))

[Th1-P51-17]

Modification of SnO₂ Electron Transport Layer to Suppress the Open Circuit Voltage Loss of the Perovskite Solar Cells

*Shamim Ahmmed^{1,2}, He Yulu¹, Md. Emrul Kayesh¹, Md. Abdul Karim¹, Kiyoto Matsuishi², Ashraful Islam¹ (1. National Institute for Materials Science (Japan), 2. University of Tsukuba (Japan))

[Th1-P51-18]

Development of Perovskite Solar Cells using Amorphous Indium Zinc Oxide substrate

*Kohei Yamamoto¹, Takurou N. Murakami¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[Th1-P51-19]

Naphthalenediimide electron transport materials as the self-assembled monolayers for perovskite solar cells

*Takashi Funaki¹, Masahiro Kashiwazaki^{1,2}, Kohei Yamamoto¹, Ryusei Emura^{1,2}, Hiroyuki Yaguchi², Takurou N. Murakami¹ (1. National Institute of Advanced Industrial Science and

Technology (AIST) (Japan), 2. Saitama University (Japan))

[Th1-P51-20]

Enhancement of Power Conversion Efficiency and Stability in Perovskite Solar Cells Using Long Carbon Chain Carbazole Derivatives

*Shu-Chi Lu¹, Ting-Han Lin¹, Kun-Mu Lee¹, Tz-Feng Lin¹, Ming-Chung Wu¹ (1. Chang Gung University (Chinese Taipei))

[Th1-P51-21]

Charge Carrier Recombination and Extraction at the Interfaces of Tin-Based Perovskite Solar Cells and Their Effects on the Photovoltaic Performance

*Dong Liu¹, Yusheng Li¹, Liang Wang¹, Dandan Wang¹, Jiaqi Liu¹, Shuzi Hayase¹, Qing Shen¹ (1. The University of Electro-Communications (Japan))

[Th1-P51-22]

Investigation of Degradation at the Au/Perovskite Interface for Light Stability Analysis in Large-Area Perovskite Modules

*Jiyeon Nam¹, Won-Kyu Lee¹, Da Seul Lee², Youngho Choe³, Donghwan Kim¹, Hae-Seok Lee⁴, Yoonmook Kang⁴ (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Advanced Institute of Nano Technology (SAINT), Sunkyunkwan University (Korea), 3. Institute of Energy Technology, Korea University (Korea), 4. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea))

[Th1-P51-23]

Development and application of carbon nanotube thin film electrodes via spray coating as alternatives to ITO electrodes for perovskite solar cells

*Naoki Ueoka¹, Mizuki Yagisawa¹, Hisayoshi Oshima², Yutaka Matsuo^{1,2} (1. Graduate School of Engineering, Nagoya University (Japan), 2. Institute of Materials Innovation, Institutes for Future Society, Nagoya University (Japan))

[Th1-P51-24]

Modifications in Crystallinity and Intermediate Phase of Chloride Incorporated Methylammonium Lead Halide Perovskites

*Saemi Takahashi¹, Satoshi Uchida¹, Hiroshi Segawa¹ (1. The University of Tokyo (Japan))

[Th1-P51-25]

Dual Interfaces Engineering for Enhanced Performance and Stability on Inverted CsPbI₂Br₂ Perovskite Solar Cells

*Siliang Cao^{1,2}, Md. Abdul Karim¹, Shamim Ahmmed^{1,2}, Md. Emrul Kayesh¹, Takeaki Sakurai², Ashraful Islam¹ (1. National Institute for Materials Science (Japan), 2. University of Tsukuba (Japan))

[Th1-P51-26]

Effects of light soaking conditions on the performance of perovskite solar cell modules

*Koki Azuma¹, Yoshihiro Hishikawa¹, Kyo Matuoka¹, Syunya Yasuda¹, Abdurashid Mavlonov¹, Takayuki Negami¹, Yu Kawano¹, Akinobu Hayakawa², Takashi Minemoto¹ (1. Ritsumeikan University (Japan), 2. Sekisui Chemical Co., Ltd. (Japan))

[Th1-P51-27]

Preparation of tin oxide thin films by liquid phase deposition method and their application to the electron transport layer of perovskite solar cells

*Seiya Kurokawa¹, Yuna Tuji¹, Yoshihiro Nagata¹, Yoshifumi Aoi¹ (1. Ryukoku University (Japan))

[Th1-P51-28]

NiO_x Thin Films Prepared by Liquid Phase Deposition (LPD) Method for Hole Transport Layers in Inverted Perovskite Solar Cells

*Yoshihiro Nagata¹, Yoshifumi Aoi¹ (1. Ryukoku university (Japan))

[Th1-P51-29]

Dopant-free polymeric hole transport materials for efficient perovskite solar cells: the effect of halogen substitution on their properties

*Wenxi Ji¹, Xiafei Cheng¹, Wei Yu², Lu Wang¹, Longgui Zhang¹, Xinmiao Niu¹, Jiaqi Du¹, Ming'ao Pan¹, Bo Song², Yi Zhou² (1. Sinopec (Beijing) Research Institute of Chemical Industry Co., Ltd. (China), 2. Soochow University (China))

[Th1-P51-30]

A ladder-like dopant-free hole-transporting polymer for hysteresis-less, high-efficiency, and high ambient stable perovskite solar cells

*Vinich Promarak¹ (1. Vidyasirimedhi Institute of Science and Technology (Thailand))

[Th1-P51-31]

Passivation of TiO₂ Electron Transporting Layer using Organic Functional Material for Highly Efficient Hybrid Perovskite Solar Cells.

*SangHo Won¹, Kyusun Kim¹, Tae Woong Kim¹ (1. Konkuk University (Korea))

[Th1-P51-32]

Low-Cost and Stable Perovskite Solar Cells Fabrication via Carbon with Metal Leaf Electrode and Double Layer Electron Transporting Layer

Anusit Kaewprajak¹, *Pisist Kumnorkaew¹ (1. National Science and Technology Development Agency (Thailand))

[Th1-P51-33]

Hybrid perovskite thin film deposition for perovskite-based tandem photovoltaics

*Julian Petry¹, Ronja Pappenberger¹, Alexander Diercks¹, Raphael Pesch¹, Ulrich Wilhelm Paetzold¹, Paul Fassl¹ (1. Karlsruhe Institute of Technology (Germany))

[Th1-P51-34]

Preparation of high-stability quasi-2D Sn-based perovskites for photovoltaic cells

*Chunqing Li¹, Masahiro Yoshizawa-Fujita¹, Masahiro Rikukawa¹, Yuko Takeoka¹ (1. Sophia University (Japan))

[Th1-P51-35]

Titanium Carbide-Titanium Dioxide Fabricated by Electrical Discharge Machining for Perovskite Solar Cells

*Kamol Sagonvaree^{1,2}, Wassana Lekkla^{1,2}, Surawut Chuangchote^{1,2} (1. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), (Thailand), 2. Research Center of Advanced Materials for Energy and Environmental Technology (MEET) (Thailand))

[Th1-P51-36]

Development of tripodal iso-triazatruxene-based hole-collecting monolayer materials for efficient inverted perovskite solar cells

*Yuta Adachi¹, Minh Anh Truong¹, Hiroshi Matsuda¹, Nobutaka Shioya¹, Tomoya Nakamura¹, Richard Murdey¹, Takeshi Hasegawa¹, Atsushi Wakamiya¹ (1. ICR, Kyoto University (Japan))

[Th1-P51-37]

Large-area fabrication of tin halide perovskite films for solar modules by imidazole additives

*Fuyuki Harata¹, Tomoya Nakamura¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹
(1. Institute for Chemical Research, Kyoto university (Japan))

[Th1-P51-38]

Green pulse laser scribing of perovskite solar cells:
comparison of nanosecond and femtosecond laser pulse duration

*Aiko Narazaki¹, Masaki Yumoto¹, Kenichi Tashiro¹, Hideyuki Takada¹, Daniela Serien¹, Kohei Yamamoto¹, Hiroyuki Kanda¹, Takuro N Murakami¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[Th1-P51-39]

Development of monolayer electron collecting materials based on rhodanine skeletons for perovskite solar cells

*Yuki MIYAKE¹, Tomoya Nakamura¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹
(1. Institute for Chemical Research, Kyoto University (Japan))

[Th1-P51-40]

The Indoor and Outdoor Photovoltaic Performance and Degradation Mechanisms of Perovskite Solar Cells

*Hayato Okawa¹, Ryouusuke Ishikawa¹, Masatoshi Yanagida², Yasuhiro Shirai², Makoto Konagai¹
(1. Tokyo City University (Japan), 2. NIMS (Japan))

[Th1-P51-41]

Alkaline Post-treatment on DC Magnetron Sputtered NiOx for Perovskite Solar Cell

*Jiahao Chen¹, Qiang Lou², Shengdong Zhang^{1,2}, Hang Zhou² (1. School of Software & Microelectronics, Peking University (China), 2. School of Electronic and Computer Engineering, Peking University Shenzhen Graduate School (China))

[Th1-P51-42]

Reduction of conduction band offset of PCBM and surface passivation of sn-based perovskite solar cell by doping with n-type polymer

*Md Emrul Kayesh¹, Md. Abdul Karim¹, He Yulu¹, Yasuhiro Shirai², Masatoshi Yasuhiro Yanagida², Ashraful Islam¹ (1. National Institute for Materials Science (Japan), 2. National Institute for Materials Science (Japan))

[Th1-P51-43]

Interface Control and Efficiency Enhancement of Mesoscopic TiO₂ Layer for All Inorganic Perovskite Solar Cells

*LYUFEI XUE¹, Kenichi Oyaizu¹, Hiroyuki Nishide¹, Takeo Suga¹ (1. Waseda University (Japan))

[Th1-P51-44]

Enhancing stability in lead-tin perovskite solar cells through surface Sn²⁺ cation stabilization

*Md. Abdul Karim¹, Yulu He¹, Yasuhiro Shirai², Ashraful Islam¹ (1. National Institute for Materials Science (Japan), 2. National Institute for Materials Science (Japan))

[Th1-P51-45]

Improving efficiency and stability of carbon-based perovskite solar cells through incorporation of carbon nanotubes for indoor applications

*piyapond Makming¹, Kumaree Thongimboon², Watcharapong Pudkon², Thanawat Kanlayapattamapong², Theerapat Arpornrat², Latthaphonh Kythavone¹, Pattama Apichai²,

Chaowaphat Seriwattanachai³, Duangmanee Wongratanaphisan², Pongsakorn Kanjanaboos³, Pipat Ruankham², Akarin Intaniewet¹ (1. School of Renewable Energy, Maejo University (Thailand), 2. Department of Physics and Materials Science, Faculty of Science, Chiang Mai University (Thailand), 3. School of Materials Science and Innovation, Faculty of Science, Mahidol University (Thailand))

[Th1-P51-46]

Enhancing UV stability in carbon-based cesium/formamidinium perovskite solar cells with an easily accessible down-conversion 2-hydroxyphenylbenzimidazole derivatives

*Kumaree Thongimboon¹, Watcharapong Pudkon¹, Theerapat Arpornrat¹, Thanawat Kanlayapattamapong¹, Pattama Apichai¹, Piyaporn Makming², Latthaphonh Kythavone², Panithan Intharawicha⁴, Natthawat Semakul⁵, Pongsakorn Kanjanaboos³, Duangmanee Wongratanaphisan¹, Pipat Ruankam¹ (1. Department of Physics and Materials Science, Faculty of Science, Chiang Mai University (Thailand), 2. School of Renewable Energy, Maejo University (Thailand), 3. School of Materials Science and Innovation, Faculty of Science, Mahidol University (Thailand), 4. Faculty of Science, Chiang Mai University (Thailand), 5. Department of Chemistry, Faculty of Science (Thailand))

[Th1-P51-47]

Addressing Evaluation Challenges of Perovskite Solar Cells Using a Multi-channel MPPT-Integrated PV Power Analysis System

*P. V. Jayaweera¹, S. Uchida², Shoji Kaneko¹, H. Segawa² (1. SPD Laboratory, Inc. (Japan), 2. The University of Tokyo (Japan))

[Th1-P51-48]

Synergistic effects of light and heat on ion migration in perovskite solar cells

*Chao-Yu Peter Chen¹, Po-Kai Kung¹, Hung-hsueh Chen¹ (1. National Cheng Kung University (Chinese Taipei))

[Th1-P51-49]

Dual Passivation at SnO₂/Perovskite Interface using Cesium carbonate for Enhancing Indoor Efficiency of Perovskite Solar Cells

*So Jeong Shin¹, Min woo Lee², Gyeong G. Jeon¹, Sang Eun Yoon¹, Jae Sung Yun^{2,3}, Jong H. Kim¹ (1. Ajou university, Korea (Korea), 2. University of New South Wales (Australia), 3. University of Surrey (UK))

[Th1-P51-50]

Progress of Film-Type Perovskite Solar Cells with Current Collection Through-hole Electrodes

*Ryousuke Ishikawa¹, Yuya Momose¹, Yuto Shinya¹, Hayato Okawa¹, Naoki Suyama¹, Makoto Konagai¹ (1. Tokyo City University (Japan))

[Th1-P51-51]

Theoretical investigation of CsPbI₂Br/Cs₂SnI₆ perovskite solar cells using SCAPS-1D

*Saad Ullah¹, Firoz Khan¹ (1. King Fahd University of Petroleum and Minerals (Saudi Arabia))

[Th1-P51-52]

Enhancing efficiency and stability of carbon-based all-inorganic CsPbIBr₂ perovskite solar cells through additive engineering

*Theerapat Arpornrat¹, Watcharapong Pudkon¹, Kumaree Thongimboon¹, Thanawat Kanlayapattamapong¹, Pattama Apichai¹, Piyapond Makming², Latthaphonh Kythavone², Atcharawon Gardchareon¹, Duangmanee Wongratanaphisan¹, Pipat Ruankham¹ (1. Department of Physics and Materials Science, Chiang Mai University, Chiang Mai (Thailand), 2.

School of Renewable Energy, Renewable Energy Engineering, Maejo University, Chiang Mai (Thailand))

[Th1-P51-53]

Exploration for metastable phases of $\text{CH}_3\text{NH}_3\text{SnI}_3$ using in-situ observation and investigation of physical properties after high-pressure and high-temperature treatment

*Kenta Nakahara¹, Yongpeng Tang¹, Qing Wang¹, Souta Inoue², Tomoki Iio², Reo Miyazaki², Masafumi Matsushita², Reina Utsumi³, Yuki Nakahira³, Hiroyuki Saito³, Satoshi Iikubo¹ (1. Kyushu University (Japan), 2. Ehime University (Japan), 3. National Institutes for Quantum Science and Technology (Japan))

[Th1-P51-54]

Transient photocurrent of perovskite solar cells excited by pulse light

*Masao Isomura¹ (1. Tokai Univ (Japan))

[Th1-P51-55]

Exploring Organic Molecules for Perovskites Solar Cells Using Deep Learning

*Naomu Sekiguchi¹, Satoshi Iikubo¹ (1. Kyushu University (Japan))

[Th1-P51-56]

Flexible Double-walled Carbon Nanotube Transparent Electrodes for Foldable Perovskite Solar Cells and Modules

*Unsoo Kim¹, Jeong-Seok Nam², Jungjin Yoon³, Jiye Han², Mansoo Choi⁴, Il Jeon² (1. Korea Institute of Energy Research (Korea), 2. Sungkyunkwan University (SKKU) (Korea), 3. Pennsylvania State University (United States of America), 4. Global Frontier Center for Multiscale Energy Systems)

[Th1-P51-57]

Enhancing durability and performance in photovoltaic cells through guanidinium-based quasi-2D halide perovskites

Matthew Bamidele¹, Tai Nguyen¹, *DO YOUNG KIM¹ (1. Oklahoma State University (United States of America))

[Th1-P51-58]

Thermodynamic stability and trapping activity in Ge-based perovskites

*Qing Wang¹, Satoshi Iikubo¹ (1. Kyushu University (Japan))

[Th1-P51-59]

Compatibility and charge carrier dynamics of p-i-n structured perovskite solar cells using hybrid deposition methods

*Pratibha Giri^{1,2}, J.P. Tiwari^{1,2} (1. Academy of scientific and Innovative Research (India), 2. CSIR-National Physical Laboratory (India))

[Th1-P51-60]

Aqueous solution based TiO_2 films for perovskite solar cells

*Itaru Raifuku¹, Xianhuan Yu², Yoji Torii², Hidenori Kawanishi², Yukiharu Uraoka² (1. Aoyama Gakuin University (Japan), 2. Nara Institute of Science and Technology (Japan))

Sub area 1-1: Policy, Market, Finance and Deployment | Area1: PV in Sustainable Energy System : Sub area 1-1: Policy, Market, Finance and Deployment

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[Th2-P11] Sub area 1-1: Policy, Market, Finance and Deployment

[Th2-P11-01]

Probabilistic framework for techno-economic assessment of photovoltaic system using site-adapted solar resource data

*Elvina Faustina Dhata^{1,2}, Chang Ki Kim^{1,2}, Hyun-Goo Kim^{1,2} (1. Korea Institute of Energy Research (Korea), 2. University of Science and Technology (Korea))

[Th2-P11-02]

A Revenue Model Framework for Solar PV Forecasting using Analog Ensemble Technique in the Context of South Korea

*Federico Enriquez del Pozo Jr.^{1,2,3}, Chang Ki Kim^{1,2}, Hyun-Goo Kim^{1,2}, Chang-yeol Yun¹ (1. Korea Institute of Energy Research (Korea), 2. University of Science and Technology (Korea), 3. Philippine Department of Science and Technology - Industrial Technology Development Institute (Philippines))

[Th2-P11-03]

RELATIONSHIP BETWEEN ECONOMIC GROWTH AND SUSTAINABLE ENERGY IN G7 NATIONS

*Deepti Deepti¹, Pawan Kumar², Kamaljit Singh³, Sushma Sharma⁴, Mohit Janoiya⁵ (1. SRM University (India), 2. SRM University (India), 3. SRM University (India), 4. SRM University (India), 5. Bureau of Indian Standards (India))

[Th2-P11-04]

Reuse of silicon PV modules: What is possible considering both technology and economics?

*Rabin Basnet¹, Laura Jones², Marco Ernst¹, Michelle McCann³, Daniel Macdonald¹ (1. The Australian National University (Australia), 2. Circular PV Alliance (Australia), 3. PV Lab Australia (Australia))

[Th2-P11-05]

Scenario Analysis of Electricity Demand Growth in Rural Areas for the Evaluation of the Reliability and Sustainability of an Off-grid System: A Case Study in Lao PDR

*Anouluck Norasing¹, Naoya Abe¹ (1. Tokyo Institute of Technology (Japan))

[Th2-P11-06]

Analysis of the circularity for PV recycling aiming at net-zero in 2050

*Tik Lun Leung^{1,2}, Anita Ho-Baillie^{1,2,3} (1. School of Physics, The University of Sydney, Sydney, NSW 2006, Australia (Australia), 2. Sydney Nano, The University of Sydney, Sydney, NSW 2006, Australia (Australia), 3. Australian Centre for Advanced Photovoltaics (ACAP), School of Photovoltaic and Renewable Energy Engineering, University of New South Wales, Sydney, NSW 2052, Australia (Australia))

[Th2-P11-07]

PV Development in Thailand to Mobilize Energy Transitions and Net Zero Emission Target

*Amornrat Limmanee¹, Dusit Kruangam, Songpakit Kaewniyompanit (1. National Energy Technology Center (ENTEC) (Thailand))

[Th2-P11-08]

Optimising Electrical, Financial, and Environmental Outcomes for Photovoltaic Module Lifecycle Management: An Automated Computational Approach

*Rama Sharma¹, Felix O'Kearney¹, Brendan Wright¹, Ziv Hameiri¹ (1. The University of New South Wales (Australia))

[Th2-P11-09]

Feasibility and Sustainability of Hybrid Solar-Hydro Power Systems in Remote Areas: Case Study of Baan Song Kwae Phatthana, Chiang Rai Province

*Thanyalak Gatesopa¹, Siripha Junlakarn² (1. Graduate School, Chulalongkorn University (Thailand), 2. Energy Research Institute, Chulalongkorn University (Thailand))

[Th2-P11-10]

Cost Benefit Analysis for a Climate-Controlled Greenhouse with a High Proportion of Local Renewable Energy

*Jorge Solis¹, David Olsson², Magnus Nilsson² (1. Karlstad University (Sweden), 2. Glava Energy Center (Sweden))

[Th2-P11-11]

Forecast on the PV installed capacity in Japan toward 2035

*Koichi Sugibuchi¹, Naofumi Ezawa¹, Haruki Yamaya¹, Satsuki KANAI¹, Yoshiyuki OHHASHI¹, Osamu Ikki¹ (1. RTS Corporation (Japan))

[Th2-P11-12]

Proposal for the Japan's solar PV policy to accelerate the installation

*Yuhei Tsukamoto¹ (1. Renewable Energy Institute (Japan))

[Th2-P11-13]

A Multi-Level Approach: Examining P2P Energy Trading for Solar Adoption in Thailand

Phimsupha Kokchang¹, *Siripha Junlakarn¹ (1. Energy Research Institute, Chulalongkorn University (Thailand))

[Th2-P11-14]

Solar Photovoltaics Policy and Financial Support in India Through Department of Science and Technology

*Vineet Saini¹, Vamsi Krishna Komarala² (1. Department of Science and Technology (India), 2. Indian Institute of Technology Delhi (India))

[Th2-P11-15]

Thailand's Rooftop Solar Potential: Unlocking Investment Through Policy

*Siripha Junlakarn¹, Supawan Saelim, Phimsupha Kokchang¹, Aksornchan Chaianong², Peetiphat Tirakiat³ (1. Energy Research Institute, Chulalongkorn University (Thailand), 2. Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany), 3. Faculty of Engineering, Department of Electrical Engineering, Chulalongkorn University (Thailand))

[Th2-P11-16]

Land Use of Installation Site for Photovoltaic Power Generation Systems in Fukushima

*Takeyoshi Kato¹, Chiyori Tanaka Urabe¹ (1. Nagoya University (Japan))

[Th2-P11-17]

Decarbonizing residential houses in Bali, Indonesia with the integration of rooftop photovoltaics and electric vehicles

Ratu Keni Atika¹, *Takuro Kobashi¹ (1. Tohoku University (Japan))

[Th2-P11-18]

Prospective Life Cycle Assessment for Perovskite Solar Cells

*Ruri Hashimoto¹, Ryouusuke Ishikawa², Norihiro Itsubo¹ (1. Waseda University (Japan), 2. Tokyo city University (Japan))

[Th2-P11-19]

Potential of non-FIT business models in Japanese PV market: Self consumption and Corporate PPAs

*Naofumi Ezawa¹, Yoshiyuki Ohashi¹, Koichi Sugibuchi¹, Haruki Yamaya¹, Satsuki Kanai¹, Osamu Ikki¹ (1. RTS Corporation (Japan))

[Th2-P11-20]

Optimization PV power bidding strategies on spot and balancing markets by applying genetic algorithm

*Bo Jie¹, Jindan Cui¹, Xue Fang¹, Takashi Oozeki², Yuzuru Ueda¹ (1. Tokyo University of Science (Japan), 2. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[Th2-P11-21]

Multi-climate Zone Modelling & Forecasting of China End-of-life PV

*Junyu Xu¹, Fang LV², Jun Ma³, Dengyuan Song³, Jinhong Dai⁴ (1. ECOPV PV RECYCLE INDUSTRY DEVELOPMENT CENTER, 2. Institute of Electrical Engineering of the Chinese Academy of Sciences, 3. DAS Solar Co., Ltd., 4. PV Committee of China Green Supply Chain Alliance)

Sub area 4-3: III-V High-efficiency Devices | Area4: Thin-film Photovoltaics and Modules : Sub area 4-3: III-V High-efficiency Devices

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[Th2-P43] Sub area 4-3: III-V High-efficiency Devices

[Th2-P43-01]

Development of large-area GaAs-based tandem solar cells using Modified smart stack

*Kikuo Makita¹, Hidenori Mizuno¹, Yukiko Kamikawa¹, Ryuji Oshima¹, Yasushi Syoji¹, Shogo Ishizuka¹, Takeyoshi Sugaya¹ (1. Advanced Industrial Science and Technology (AIST) (Japan))

[Th2-P43-02]

Enhancing surface roughness and optimizing bonding characteristics with appropriate metallization for high-efficiency III-V/Si tandem solar cells

*Junhan Bae¹, Mengmeng Chu¹, Hasnain Yousuf¹, Muhammad Quddamah Khokhar², Polgampola Chamani Madara², Min-Kyung Shin², Sangheon Park³, Junsin Yi⁴ (1. Sungkyunkwan University (Korea), 2. Sungkyunkwan University (Korea), 3. Sungkyunkwan University (Korea), 4. Sungkyunkwan University (Korea))

[Th2-P43-03]

Development of Ultra-thin III-V Photovoltaic Devices for High-Efficiency Transparent Application

*Kentaroh Watanabe¹, Hassanet Sodabanlu¹, Meita Asami¹, Yoshiaki Nakano¹, Masakazu Sugiyama¹ (1. The University of Tokyo (Japan))

[Th2-P43-04]

Application-oriented high-efficiency quantum well superlattice thin-film triple-junction solar cells

*Menglu yu Yu^{1,2}, JunHua Long², ShuLong Lu², QiangJian Sun², ZhiTao Chen^{2,1}, XiaoXu Wu^{2,1} (1. University of Science and Technology of China (China), 2. Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences (China))

[Th2-P43-05]

Performance analysis of space solar cells under increased irradiance conditions

*Yoshiyuki Murakami¹, Teppei Okumura¹, Tetsuya Nakamura¹, Daisuke Sato², Taishi Sumita¹ (1. Japan Aerospace Exploration Agency (Japan), 2. Nagaoka University of Technology (Japan))

[Th2-P43-06]

Development of Si Tandem Solar Cells for Vehicle Integrated Photovoltaics

*Masafumi Yamaguchi¹, Tatsuya Takamoto², Kenichi Okumura³, Takashi Mabuchi³, Kyotaro Nakamura¹, Ryo Ozaki¹, Nobuaki Kojima¹, Yoshio Ohshita¹ (1. Toyota Technological Institute (Japan), 2. Sharp Corporation (Japan), 3. Toyota Motor Corporation (Japan))

[Th2-P43-07]

The Impact of Si/Be Co-doping on the Performance of InGaAs Thermophotovoltaic Cells

*Zhao Huyin^{1,2}, Li Xuefei², Long Junhua², Lu Shulong² (1. University of Science and Technology of China (China), 2. Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (China))

[Th2-P43-08]

Enhanced reflectivity of InGaAs solar cells using patterned dielectric back contacts for thermophotovoltaic applications

*Masaki Date^{1,2}, Ryuji Oshima², Yasushi Shoji², Hitoshi Sai², Makoto Shimizu³, Takeyoshi Sugaya², Shuhei Yagi¹, Hiroyuki Yaguchi¹ (1. Saitama University (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Graduate School of Engineering, Tohoku University (Japan))

[Th2-P43-09]

Is the Availability of III-V Materials a Real Concern?

*Jessica Yajie Jiang¹, Ivan Perez-Wurfl¹, Martin Green¹, Ned Ekins-Daukes¹ (1. UNSW (Australia))

[Th2-P43-10]

Comprehensive study of optoelectronic reciprocity relation and diode ideality factor under light irradiation through EL and PL measurements

*Meita Asami¹, Kentaroh Watanabe¹, Yoshiaki Nakano², Masakazu Sugiyama¹ (1. RCAST, The University of Tokyo (Japan), 2. School of Engineering, The University of Tokyo (Japan))

[Th2-P43-11]

Blueshift of the photoluminescence peak energy as a function of excitation power in an InGaAs/GaAsP wire-on-well quantum structure

*Kaiya Nakajima¹, Nana Taketa¹, Meita Asami², Masakazu Sugiyama², Tetsuo Ikari¹, Atsuhiko Fukuyama¹ (1. University of Miyazaki (Japan), 2. Research Center for Advanced Science and Technology, The University of Tokyo (Japan))

[Th2-P43-12]

Analyses of Luminescence Coupling in ELO thin-film tandem solar cells

*Sota Itsubo¹, Dairoku Inaba¹, Naoya Miyashita¹, Koichi Yamaguchi¹ (1. University of Electro-Communications (Japan))

[Th2-P43-13]

Growth and evaluation of GaAsN films with different N distribution grown by atomic layer epitaxy

*Hayato Koto¹, Masahiro Kawano¹, Hidetoshi Suzuki¹ (1. University of Miyazaki (Japan))

Sub area 5-1: Perovskite Photovoltaics | Area5 : Perovskite and Emerging Photovoltaics : Sub area 5-1: Perovskite Photovoltaics

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[Th2-P51] Sub area 5-1: Perovskite Photovoltaics

[Th2-P51-01]

Organic-inorganic perovskite solar cells with asymmetric diamines (II) -Control of orientation-

*HIRONA Kobayashi¹, Masatoshi Yanagida², Yasuhiro Shirai², Daizo Hishida¹, Masahiro Yoshizawa-Fujita¹, Masahiro Rikukawa¹, Yuko Takeoka¹ (1. Sophia University (Japan), 2. NIMS (Japan))

[Th2-P51-02]

A structural study of (202) oriented two-dimensional perovskite $(C_4H_9NH_3)_2(CH_3NH_3)Pb_2I_7$ films by in-plane x-ray diffraction measurements

*Norimitsu Yoshida¹, Fumiya Sano¹, Haruya Mori¹, Yuya Futamura¹, Yasushi Sobajima¹, Hito Habuchi² (1. Gifu University (Japan), 2. National Institute of Technology, Gifu College (Japan))

[Th2-P51-03]

Band-bending-induced enhancement of perovskite solar cell performance via vitamin A-based passivation

*James Caseria Solano¹, Itaru Raifuku^{1,2}, Hidenori Kawanishi¹, Yukiharu Uraoka¹ (1. Nara Institute of Science and Technology (Japan), 2. Aoyama Gakuin University (Japan))

[Th2-P51-04]

Defects evaluation of perovskite solar cells using electrical and optical characterization methods

*Koki Kimura¹, Tatsuro Kawamura^{1,2}, Itaru Raifuku¹, Yasuaki ishikawa¹ (1. Aoyama Gakuin university (Japan), 2. EneCoat Technologies Co., Ltd. (Japan))

[Th2-P51-05]

Advanced additive engineering for high-performance wide-bandgap tin perovskite via 4-phenyl-thiosemicarbazide

*SungWon Cho¹, Padmini Pandey¹, Dong-Won Kang¹ (1. Chung-Ang University (Korea))

[Th2-P51-06]

Predicting the Quality of Photovoltaic Materials in Lead-Reduced Perovskite Solar Cells Using Photo-Assisted Kelvin Probe Force System

*Ming-Chung Wu^{1,2}, Ying-Han Liao¹, Shun-Hsiang Chan¹, Shih-Hsuan Chen¹, Yuan-Yu Chiu¹, Yin-Hsuan Chang¹, Ting-Han Lin^{1,2}, Ku-Mun Lee^{1,2} (1. Department of Chemical and Materials Engineering, Chang Gung University (Chinese Taipei), 2. Center for Sustainability and Energy Technologies, Chang Gung University (Chinese Taipei))

[Th2-P51-07]

Enhancing long-term operational stability of pseudo-halide based perovskite solar cells

*Farhan Yousuf¹, Raja Rajendran¹, Chen Fu Lin¹, Peter Chen^{1,2,3,4} (1. Department of Photonics, National Cheng Kung University (Chinese Taipei), 2. Core-Facility Center (CFC), National Cheng Kung University (Chinese Taipei), 3. Hierarchical Green-Energy Materials (Hi-GEM) Research

Center, National Cheng Kung University (Chinese Taipei), 4. Program on Key Materials, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University (Chinese Taipei))

[Th2-P51-08]

Stabilizing Perovskite Precursor Solution via Chemical Approach

*Tanakorn Kittikool¹, Ladda Srathongsian¹, Pongsakorn Kanjanaboos^{1,2} (1. School of Materials Science and Innovation, Faculty of Science, Mahidol University (Thailand), 2. Center of Excellence for Innovation in Chemistry (PERCH CIC), Ministry of Higher Education, Science, Research and Innovation (Thailand))

[Th2-P51-09]

TiO₂/SnO₂ electron transport bilayer prepared by chemical bath deposition for perovskite solar cells

*Xianhuan Yu¹, Itaru Raifuku², Hidenori Kawanishi¹, Yukiharu Uraoka¹ (1. Nara Institute of Science and Technology (Japan), 2. Aoyama Gakuin University (Japan))

[Th2-P51-10]

Wide bandgap, mixed-halide perovskites: Correlating halide segregation and cell performance

*Richard Murdey¹, Ai Shimazaki¹, Ryuji Kaneko¹, Minh Anh Truong¹, Tomoyo Nakamura¹, Atsushi Wakamiya¹ (1. Kyoto University (Japan))

[Th2-P51-11]

Light-induced phase separation in mixed halide perovskite thin films revealed by hyperspectral imaging spectroscopy

Yusuke Daikoku¹, Takumi Yamada¹, Ai Shimazaki¹, Tomoya Nakamura¹, Atsushi Wakamiya¹, *Yoshihiko Kanemitsu¹ (1. Kyoto University (Japan))

[Th2-P51-12]

Single-isomer bis(pyrrolidino)fullerenes as electron transport materials for tin halide perovskite solar cells

*Tomoya Nakamura¹, Takabumi Nagai², Yuki Miyake¹, Takumi Yamada¹, Yoshihiko Kanemitsu¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Institute for Chemical Research, Kyoto University (Japan), 2. HARVES Co., Ltd. (Japan))

[Th2-P51-13]

Automation of Perovskite Solar Cell Fabrication via the Antisolvent Method and the Effect of Residual PbI₂ on Reproducibility

*Naoto Eguchi¹, Kohei Yamamoto¹, Hiroyuki Kanda¹, Santa Mondal¹, Takuro N Murakami¹ (1. National Institute of Advanced Industrial Science and Technology (Japan))

[Th2-P51-15]

Understanding the mechanism of organic additive to fabricate stable co-evaporated CsPbI₃ perovskite solar cells

*Sangwon Lee¹, Seok-Hyun Jeong¹, Sujin Cho¹, Jae-Keun Hwang¹, Wonkyu Lee¹, Solhee Lee¹, Dowon Pyun¹, Jiyeon Nam¹, Ji-Seong Hwang¹, Youngmin Kim¹, Jihyun Jang¹, Youngho Choe¹, Yoonmook Kang¹, Donghwan Kim¹, Hae-Seok Lee¹ (1. Korea University (Korea))

[Th2-P51-16]

Light-induced ESR study on charge states in PEAI-passivated perovskite solar cells

*Liqi Liu¹, Seira Yamaguchi^{1,2}, Yizhou Chen¹, Atsushi Sato¹, Kazuhiro Marumoto^{1,2,3} (1. Department of Materials Science, University of Tsukuba (Japan), 2. Consortium of Organic-Inorganic Quantum Spin Science and Technology, University of Tsukuba (Japan), 3. Tsukuba Research Center for Energy Materials Science, University of Tsukuba (Japan))

[Th2-P51-17]

Device simulation on CsPbBr₃ photovoltaic power converter using ZnMgO buffer layer and Si-doped GaN transparent conducting layer

*Yuejie TAN¹, Lei Meng², Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan), 2. Beijing University of Technology (China))

[Th2-P51-18]

Hole transport layer-free carbon electrode-based perovskite solar cells

Huashang Rao¹, *Xinhua Zhong¹, Zhenxiao Pan¹ (1. South China Agricultural University (China))

[Th2-P51-19]

Defect passivation effect of TEACl on wide band gap p-i-n perovskite solar cell

*Enkhjargal Enkhbayar¹, Namuundari Otgontamir¹, SeongYeon Kim², Jinho Lee¹, JunHo Kim¹ (1. Incheon National University (Korea), 2. Daegu Gyeongbuk Institute of Science (Korea))

[Th2-P51-20]

Phenolphthalein: Small-molecule additive for high performance and ambient-air-stable FAPbI₃ perovskite solar cells

*Yasuhiko HAYASHI¹, Hytham Elbohy², Ding Haoyu¹, Hiroo Suzuki¹, Takeshi Nishikawa¹, Aung Ko Ko Kyaw³ (1. Okayama University (Japan), 2. Damietta University (Egypt), 3. Southern University of Science and Technology (China))

[Th2-P51-21]

Hole Transport Materials with Green Solvent Processed Based On Dopant-Free Pyrazine for Perovskite Solar Cells

*Bohyeon Cho¹, Jinsoo Yoo¹, Hyerin Kim¹, Sung-Ho Jin¹ (1. Pusan National University (Korea))

[Th2-P51-22]

Interface engineering on wide-bandgap p-i-n perovskite for tandem solar cells

*Seongwook Yun², Enkhjargal Enkhbayar¹, TaeEi Hong¹, JunHo Kim^{1,2} (1. Department of Physics, Incheon National University (Korea), 2. Department of intelligent semiconductor engineering, Incheon National University (Korea))

[Th2-P51-23]

Tin oxide nanoparticle as hole transporting layer for highly stable Sn-based perovskite solar cells

*Jannatul Ferdous^{1,2,3}, Wipakorn Jevasuwan¹, Md. Emrul Kayesh², Ashraful Islam², Naoki Fukata¹ (1. Research Centre for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS) (Japan), 2. Photovoltaic Materials Group, Center for Green Research on Energy and Environmental Materials, National Institute for Materials Science (NIMS) (Japan), 3. Graduate School of Pure and Applied Sciences, University of Tsukuba (Japan))

[Th2-P51-24]

Impact of alkali metal hydroxide treatment on perovskite solar cell performance

Yuki Fujita¹, *Toshinori Matsushima¹ (1. Kyushu University (Japan))

[Th2-P51-25]

Investigating the Thermal Stability of Formamidinium-Cesium Lead Halide Perovskite Solar Cells Fabricated under Air Ambient Conditions

*Binita Boro¹, Snehangshu Mishra², Paulomi Singh¹, Shailendra Kumar Varshney⁴, Basudev Lahiri⁴, Trilok Singh³ (1. School of Nano Science and Technology, Indian Institute of Technology Kharagpur, 721302, India (India), 2. School of Energy Science and Engineering, Indian Institute of Technology Kharagpur, 721302, India (India), 3. Department of Energy Science and Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India (India), 4. Department of Electronics and Electrical Communication Engineering, Indian Institute of Technology Kharagpur, 721302, India (India))

[Th2-P51-26]

Facile Bar-coating Process for All-inorganic Perovskite Layers: Ink Additives and their Surface Modification effects.

*Rio Shimizu¹, Kenichi Oyaizu¹, Hiroyuki Niside¹, Takeo Suga¹ (1. Waseda university (Japan))

[Th2-P51-27]

Synthesis of (9-triptycyl)tin halide complex and its application to tin halide perovskite solar cells

*Akio Hasegawa¹, Chien-Yu Chen¹, Tomoya Nakamura¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Institute for Chemical Research, Kyoto University (Japan))

[Th2-P51-28]

Compositional engineering of double-cation single-halide perovskite for efficient solar cells fabricated in air ambient conditions

*Mrittika Paul¹, Binita Boro², Amreesh Chandra³, Trilok Singh⁴ (1. School of Energy Science and Engineering, Indian Institute of Technology Kharagpur, 721302, India (India), 2. School of Nano Science and Technology, Indian Institute of Technology Kharagpur, 721302, India (India), 3. Department of Physics, Indian Institute of Technology Kharagpur, 721302, India (India), 4. Semiconductor Thin Films and Emerging Photovoltaic Laboratory, Department of Energy Science and Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India (India))

[Th2-P51-29]

Effects of Voids within Copper Iodide Hole Transport Layer for Bonding Fabrication of Perovskite Solar Cells through Hot-Pressing Method

*Auttaphon Ploypradit¹, Masao Isomura¹, Koji Tomita¹, Tetsuya Kaneko¹ (1. Tokai University (Japan))

[Th2-P51-30]

Side-Chain Engineering of Thienothiophene-containing Polymer as Hole transporting Materials for All inorganic Perovskite Solar cell.

*Yu Sakai¹, Kenichi Oyaizu¹, Hiroyuki Niside¹, Takeo Suga¹ (1. Waseda University (Japan))

[Th2-P51-31]

Optimization of mixed-cation mixed-halide perovskites for indoor light harvesting

*Snehangshu Mishra¹, Binita Boro¹, Trilok Singh^{1,2} (1. Indian Institute of Technology Kharagpur (India), 2. Indian Institute of Technology Delhi (India))

[Th2-P51-32]

Perovskite solar cells based on low-temperature carbon electrodes

*Yiming Li¹, Bingcheng Yu¹, Dongmei Li¹, Qingbo Meng¹ (1. The Institute of Physics, Chinese Academy of Sciences (China))

[Th2-P51-33]

Revealing the effect of the working pressure on the properties of sputtered PbI_2 film for its photovoltaic application

*Wonkyu Lee¹, Jae-Keun Hwang¹, Youngmin Kim², Ji-Seong Hwang¹, Seok-Hyun Jeong¹, Youngho Choe³, Yoonmook Kang², Hae-Seok Lee², Donghwan Kim¹ (1. Department of Materials Science and Engineering, Korea University (Korea), 2. Graduate School of Energy and Environment (KU-KIST Green School), Korea University (Korea), 3. Institute of Energy Technology, Korea University, (Korea))

[Th2-P51-34]

Enhanced performance of mixed Sn-Pb perovskite solar cells via $\text{Sn}(\text{SCN})_2$ passivation

*Seongju Park¹, Byungha Shin¹ (1. Korea Advanced Institute of Science and Technology (Korea))

[Th2-P51-36]

Enhancing efficiency and stability of perovskite solar cells in indoor environments through interface treatment using a quinoxaline-based small molecule

*DONG HYUN LEE¹, SEOK WOO LEE², MIN JUN CHOI¹, JIN HEE HEO³, DONG WOOK CHANG², JONG H. KIM¹ (1. Ajou University (Korea), 2. Pukyong National University (Korea), 3. Korea Institute of Materials Science (KIMS) (Korea))

[Th2-P51-37]

Enhanced perovskite solar cell stability and efficiency via adding multi-functional water absorbent

*Wenxi Ji¹, Xiafei Cheng¹, Ming'ao Pan¹, Xinmiao Niu¹, Jiaqi Du¹, Longgui Zhang¹, Bo Song², Yi Zhou² (1. Sinopec (Beijing) Research Institute of Chemical Industry Co., Ltd. (China), 2. Soochow University (China))

[Th2-P51-38]

Spray Coated Perovskites for Large Area Perovskite-Si Tandem Solar Cell Device Fabrication

*Calum McDonald¹, Abduheber Mirzehmet¹, Hitoshi Sai¹, Takurou N Murakami¹, Takuya Matsui¹ (1. AIST (Japan))

[Th2-P51-39]

Boosting the performance of tin halide perovskite solar cells with metal halide electron interfacial layers

*Chien-Yu Chen¹, Fuyuki Harata¹, Tomoya Nakamura¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Kyoto University (Japan))

[Th2-P51-40]

Semitransparent tin halide perovskite solar cells with indium zinc oxide top electrode

*Chihiro Sakamoto¹, Tomoya Nakamura¹, Noboru Ohashi¹, Fuyuki Harata¹, Chien-Yu Chen¹, Minh Anh Truong¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Kyoto University (Japan))

[Th2-P51-41]

Hole-collecting monolayer materials with squaraine skeletons for perovskite solar cell

*Shota Hira¹, Minh Anh Truong¹, Nakamura Tomoya¹, Richard Murdey¹, Atsushi Wakamiya¹ (1. Institute for Chemical Research, Kyoto University (Japan))

[Th2-P51-42]

Improved Performance of Additive-Passivated Perovskite Solar Cells Fabricated by the DMF-free Vacuum Quenching Method

*Shota Araki¹, Toshimitsu Mochizuki¹, Hidetaka Takato¹, Katsuto Tanahashi¹ (1. National Institute of Advanced Industrial Science and Technology (Japan))

[Th2-P51-43]

The introduction of the Dry Process for TCO, HTL and ETL by a low damage four facing targets sputtering cathode on perovskite photovoltaic

*Yoshiki Nishida¹, Tetsuya Saruwatari¹ (1. Keihin Ramtech Co.,Ltd. (Japan))

[Th2-P51-44]

Versatile Ambiphilic Interface Molecule for Boosting Efficiency and Stability of Perovskite Solar Cells under Various Illumination Conditions

*Min Jun Choi¹, Seok Woo Lee², So Jeong Shin¹, Hong Jae Shim³, Sang Eun Yoon¹, Jae Sung Yun^{3,4}, Dong Wook Chang², Jong H. Kim¹ (1. Ajou University (Korea), 2. Pukyong National University (Korea), 3. University of New South Wales (Australia), 4. University of Surrey (UK))

[Th2-P51-45]

Close space sublimation of CsPbBr₃ films for photovoltaic device applications

*Kyosuke Yawata¹, Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan))

[Th2-P51-46]

Minority carrier lifetime in CH₃NH₃PbI₃ perovskite films with doped amorphous Si

*CHENXI LI¹, Tu Huynh Thi Cam¹, Keisuke Ohdaira¹, Peng Liu², Md. Shahiduzzaman², Tetsuya Taima² (1. Japan Advanced Institute of Science and Technology (Japan), 2. Kanazawa University (Japan))

[Th2-P51-47]

Application of the transparent electrode material In₂O₃:Ti to MAPbI₃-based thin film solar cells

*Masataka Taya¹, Yuga Nagakusa¹, Kouhei Kojima¹, Norimitsu Yoshida¹, Yasushi Sobajima¹ (1. Gifu University (Japan))

[Th2-P51-48]

Effects of MAcl as a Key Additive for Stable and High-efficiency Perovskite Solar Cells via a Two-step Process

*Yeonwoo Park¹, Jae Ho Yun¹ (1. Korea Institute of Energy Technology (Korea))

[Th2-P51-49]

Fabrication of CsPb(Br_{0.45}Cl_{0.55})₃ photovoltaic power converters for optical wireless power transmission systems using NiO_x hole transport layer

*Atsuto Watanabe¹, Yosuke Abe¹, Takahito Nishimura¹, Shinsuke Miyajima¹ (1. Tokyo Institute of Technology (Japan))

[Th2-P51-50]

Strategic Method for Achieving Uniform Tin Oxide Layer Using a Conjugated Small Molecular Dispersant to Enhance Efficiency of Perovskite Solar Cells in Versatile Light Environments

*Hyewon Chun¹, Gyeong G. Jeon¹, So Jeong Shin¹, Min Jun Choi¹, Jong H. Kim¹ (1. Ajou University (Korea))

[Th2-P51-51]

Nanoscale Local Contacts Enable Inverted Inorganic Perovskite Solar Cells with 20.8% Efficiency

*Shanshan Qi¹, Sanlong Wang¹, Pengyang Wang¹, Ying Zhao¹, Xiaodan Zhang¹ (1. Nankai University (China))

[Th2-P51-52]

Improving FAPbBr₃ Perovskite Crystal Quality via Additive Engineering for High Voltage over Solar Cell over 1.5 V

*Tae Min Kim¹ (1. Korea University (Korea))

[Th2-P51-53]

Enhancing Perovskite Solar Cell Performance through Optimization of 2D/3D Perovskite Layers with PEAX (X = Cl, Br, and I)

*Naoyuki Shibayama¹ (1. Toin University of Yokohama (Japan))

[Th2-P51-54]

Decoding the hetero-atom driven crystallinity and energy transfer in perovskite solar cells

*Muhammed P.U. Haris¹, Amir Al-Ahmed¹, Atif AlZahrani¹ (1. Interdisciplinary Research Center for Sustainable Energy Systems (IRC-SES), King Fahd University of Petroleum & Minerals (KFUPM), Dhahran (Saudi Arabia))

[Th2-P51-55]

Bridging the Gap; Scalable Research in Perovskite-based Photovoltaics from Lab to Industry.

*César Omar Ramírez Quiroz¹ (1. FOM Technologies A/S (Denmark))

[Th2-P51-56]

Sustainable perovskite photovoltaics: Advancing with green halide chemistry and LCA insights

*Christoph Bohr¹, Tim Ludwig¹, Robert Frohnhoven¹, Senol Öz¹, Amani Maalouf², Tobechi Okoroafor², Shahaboddin Resalati² (1. Solaveni GmbH (Germany), 2. Oxford Brookes University (UK))

[Th2-P51-57]

Advancing perovskite solar cell stability with organic sulfonium cations

Appiagyei Ewusi Mensah¹, *Francis Kwaku Asiam¹, ASHOK KUMAR KALIAMURTHY¹, Junyeong Ryu¹, Farihatun Jannat Lima¹, Jae-Joon Lee¹ (1. Research Center for Photoenergy Harvesting & Conversion Technology (phct), Department of Energy and Materials Engineering, Dongguk University, Seoul, 04620, Republic of Korea. (Korea))

[Th2-P51-58]

Evolution and effect of PbI₂ on MA and Cs containing FAPI perovskites with different annealing atmospheres.

*Muhammad Uzair Farooq¹, Sevan Gharabeiki², Ding Yong³, Jean-Nicolas Audinot⁴, Tom Wirtz⁵, Mohammad Khaja Nazeeruddin⁶, Susanne Siebentritt⁷, Alex Redinger⁸ (1. University of Luxembourg (Luxembourg), 2. University of Luxembourg (Luxembourg), 3. École Polytechnique Fédérale de Lausanne (Switzerland), 4. Luxembourg Institute of Science and Technology (Luxembourg), 5. Luxembourg Institute of Science and Technology (Luxembourg), 6. École Polytechnique Fédérale de Lausanne (Switzerland), 7. University of Luxembourg (Luxembourg), 8. University of Luxembourg (Luxembourg))

[Th2-P51-59]

Photodegradation and recovery of perovskite solar cells under one-sun and indoor illumination

*Shahriyar Safat Dipta¹, Qihuan Hu¹, Walia Binte Tarique¹, Ashraful Hossain Howlader¹, Ashraf Uddin¹ (1. University of New South Wales)

[Th2-P51-60]

Surface and bulk defects passivation with mixed fluorebenzylammonium halides in chlorideiodide perovskite solar cell

*Ashraful Hossain Howlader¹, Shahriyar Safat Dipta¹, Walia Binte Tarique¹, Ashraf Uddin¹ (1. UNSW Sydney)

Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics | Area2: System Engineering and Field Performance : Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics

🏠 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏠 PS-11/Multipurpose Hall (1F)

[Th3-P21] Sub area 2-1: Integrated PV and Advanced Applications of Photovoltaics

Session Chair(s):Mitsuru Imaizumi(Sanjo City Univ.)

[Th3-P21-01]

Vibration and resonance of the solar cells inside the PV module: VIPV reliability issues

*Kenji Araki Araki¹, Yasuyuki Ota¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

[Th3-P21-02]

A High Voltage Regulation Grid-tied PV Inverter based on a Series AC Capacitor-CSI-Buck Converter Topology with Grid-fault Ride Through Capacity

Chengye Liao¹, Krit Lertlam¹, Banri Khemkladmuk¹, Sarinya Sala-ngam¹, Kittiwath Jeebkaew², Piyapat Panmuang³, Dhidik Prastiyanto⁴, Mohd Azli Salim⁵, *Chonlatee Photong¹ (1. Faculty of Engineering, Mahasarakham University (Thailand), 2. Sakon Nakhon Rajabhat University (Thailand), 3. Rajamangala University of Technology Isan (Thailand), 4. Universitas Negeri Semarang (Indonesia), 5. Universiti Teknikal Malaysia Melaka (Malaysia))

[Th3-P21-03]

Development of high-sensitivity neutron detection device using double-sided gadolinium oxide conversion films on silicon solar cells

*Sho Otsuka¹, Yasuki Okuno¹, Tomohiro Kobayashi¹, Yoshie Otake¹ (1. RIKEN (Japan))

[Th3-P21-04]

Design of optical thin films for building-integrated photovoltaics using numerical calculations

*Sou Kubota^{1,2}, Seiya Watanabe¹, Leo Adachi^{1,2}, Zhihao Xu², Hitoshi Sai², Michio Kondo^{1,3}, Hiroyuki Wada¹ (1. Tokyo Institute of Technology (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Waseda University (Japan))

[Th3-P21-05]

GIS- based solar irradiance estimation method in VIPV using DSM and satellite observation data

*Pawita Bunme¹, Hidenori Mizuno¹, Takumi Takashima¹, Takashi Oozeki¹ (1. Renewable Energy Research Center, AIST (FREA) (Japan))

[Th3-P21-06]

Dependence of irradiated laser wavelength on the conversion efficiency of CIGS solar cells

*Moeka Chiba¹, Reo Aoyama¹, Shuntaro Fujii¹, Kyosuke Sato¹, Riku Maeno¹, Shunsuke Shibui¹, Hironori Komaki², Hiroaki Nakamura², Hiroshi Tomita², Takato Ishiuchi², Shiro Uchida¹ (1. Chiba Institute of Technology (Japan), 2. Idemitsu Kosan Co., Ltd. (Japan))

[Th3-P21-07]

A development of a corrugated roof tile solar panel in Thailand

*Prasan Pankaew¹ (1. Faculty of Science, Silpakorn University (Thailand))

[Th3-P21-09]

White Building-Integrated Photovoltaics by Covering Textured Surface Glass

*DISONG ZHAO¹, Kaito Shishido^{1,2}, Zhihao Xu², Hitoshi Sai², Michio Kondo^{1,3}, Hiroyuki Wada¹ (1. Tokyo Institute of Technology (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Waseda University (Japan))

[Th3-P21-10]

Preparation and Characterization of Photovoltaics with Mica Pigment for Decoration

*PENG GAO¹, Leo Adachi¹, Sou Kubota¹, Zhihao Xu², Hitoshi Sai², Michio Kondo³, Hiroyuki Wada¹ (1. Tokyo Institute of Technology (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Waseda University (Japan))

[Th3-P21-11]

White Building-Integrated Photovoltaics by Using Nanocellulose Materials

*Leo Adachi^{1,2}, Takaaki Kasuga³, Manami Suzuki^{1,2}, Kota Goto^{1,2}, Zhihao Xu², Hitoshi Sai², Masaya Nogi³, Michio Kondo⁴, Hiroyuki Wada¹ (1. Tokyo Institute of Technology (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Osaka University (Japan), 4. Waseda University (Japan))

[Th3-P21-12]

Development of Video Processing Technology for Continuous Analysis of Solar Radiation on Vehicles

*Naoki Mukai¹, Kenji Araki², Yasuyuki Ota^{1,2}, Kensuke Nishioka^{1,2} (1. Graduate School of Engineering, University of Miyazaki (Japan), 2. GX Research Center, University of Miyazaki (Japan))

[Th3-P21-13]

Field testing of the CPV-Thermal hybrid system for high-efficiency energy harvesting

*Kentaroh Watanabe¹, Meita Asami¹, Takashi Iwasaki², Masakazu Sugiyama¹ (1. The University of Tokyo (Japan), 2. Direct Sun Energy Institute Co. Ltd. (Japan))

[Th3-P21-14]

Wavelength dependence of incident laser wavelength of 3-junction InGaAs solar cell for optical fiber power transmission

*Reo Aoyama¹, Moeka Chiba¹, Junichi Suzuki¹, Shunsuke Shibui¹, Kosuke Watanabe¹, Ryota Warigaya¹, Kouichi Akahane², Shiro Uchida¹ (1. Chiba Institute of Technology (Japan), 2. National Institute of Information and Communications Technology (Japan))

[Th3-P21-15]

InGaP power converter module under high-power 638 nm laser irradiation of 5W

*Ryusei Takahashi¹, Junichi Suzuki¹, Gin Hirano¹, Reo Aoyama¹, Moeka Chiba¹, Kosuke Watanabe¹, Shunsuke Shibui¹, Masahiro Koga¹, Yuta Nishidate¹, Masaki Ayukawa², Masaki Maeda², Kazuyuki Iizuka², Toshihiko Fukamachi², Kouichi Akahane³, Shiro Uchida¹ (1. Chiba Institute of Technology (Japan), 2. Ushio Inc. (Japan), 3. National Institute of Information and Communications Technology (Japan))

[Th3-P21-16]

An agrivoltaics system using colored photovoltaic modules.

*sasiwimon songtra¹, Perawut Chinnavornrungrong², Vichit Saengsuwan², Supoj Sodarat², Sirimongkon Sangkhawong², Phasapon Manosukritkul³, Noppadon Nuntawong¹, Kobsak Sriprapha¹ (1. National Electronics and Computer Technology Center (Thailand), 2. National Energy Technology Center (Thailand), 3. King Mongkut's Institute of Technology Ladkrabang Prince of Chumphon Campus (Thailand))

[Th3-P21-17]

Estimating Potential of Solar Cell Installation with Façade of Buildings Considering Technological Innovation Scenarios

*Shuai Wang¹, Masashi Oya¹, Natsuki Otoshi¹, Keisuke Kameda¹, Sergei Manzhos¹, Manabu Ihara¹ (1. Tokyo Institute of Technology (Japan))

[Th3-P21-18]

Portable self-powered solar integrated system: An application for emergency and outdoor perovskite solar cell stability testing

*Chattarin Muensuksaeng¹, Chinnatip Harnmanasvate², Jakapan Chantana³, Rongrong Cheacharoen⁴ (1. Department of Physics, Chulalongkorn University (Thailand), 2. International Graduate Program of Nanoscience & Technology, Chulalongkorn University (Thailand), 3. Department of Electrical and Electronic Engineering, Ritsumeikan University, (Japan), 4. Metallurgy and Materials Science Research Institute, Chulalongkorn University (Thailand))

[Th3-P21-19]

Saving charging electricity and frequency by VIPV: PV-powered passenger car

Keiichi Komoto¹, *Ryohei Toyoda¹, Takahiro Kirihara¹ (1. Mizuho Research & Technologies, Ltd. (Japan))

[Th3-P21-20]

Performance Analysis of Vehicle Integrated Photovoltaic System using Total Cross Tied Module

*Keiya Tamada¹, Yasuyuki Ota^{1,2}, Kyotaro Nakamura³, Masafumi Yamaguchi³, Yoshio Ohshita³, Kenji Araki², Kensuke Nishioka^{1,2} (1. Graduate School of Engineering, University of Miyazaki (Japan), 2. GX Reserach Center, University of Miyazaki (Japan), 3. Toyota Tech Inst. (Japan))

[Th3-P21-21]

Performance analysis of solar water pumping system on sunny and cloudy days in Indian climatic conditions using bi-facial photovoltaic panels

*Richa Parmar¹, Dr. Jai Prakash¹, Dr. Anmol Saxena², Mohd. Adil Faizi¹ (1. National Institute of Solar Energy (India), 2. National Institute of Technology Delhi (India))

[Th3-P21-22]

Output estimation of Vehicle Integrated Photovoltaic modules under actual partial shading condition

*Shoki Hirata¹, Kenji Araki^{1,2}, Yasuyuki Ota^{1,2}, Kensuke Nishioka (1. Graduate School of Engineering, University of Miyazaki (Japan), 2. GX Research Center, University of Miyazaki (Japan))

[Th3-P21-23]

Demonstration of radiation-induced color center reduction by light soaking in ceria undoped glass

*Taketo Aihara¹, Tetsuya Nakamura¹, Shin-ichiro Sato², Takeshi Ohshima², Yuta Matsumoto³, Hiroshi Yamaguchi³, Tatsuya Takamoto³ (1. Japan Aerospace Exploration Agency (Japan), 2. National Institutes for Quantum Science and Technology (Japan), 3. Sharp Energy Solutions Corporation (Japan))

[Th3-P21-24]

BIPV improved risks management solution – Steel use as reliable and durable alternative

*Simon BODDAERT¹, Jean-Pierre REYAL², Philippe ALAMY³ (1. CSTB (France), 2. SEMPERSTYL (France), 3. EnerBIM (France))

[Th3-P21-25]

Rapid Generation of Solar Spectrum with Sensor Photodiode Arrays

*Kaiki Matsubayashi¹, Kenji Araki¹, Yasuyuki Ota¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

[Th3-P21-26]

Power generation characteristics of vertical bifacial PV systems in snowy regions : Experiments and simulations

*Shuto Tsuchida¹, Shuji Ide², Shunsuke Korikawa², Noboru Yamada¹ (1. Nagaoka university of technology (Japan), 2. Shizen energy Inc. (Japan))

[Th3-P21-27]

Reducing Snow Load Damage in PV Systems with Integrated Heating Technology

*Tadanori Tanahashi¹, Takahiro Chiba², Satoru Adachi³, Hayato Arakawa³, Yuki Tsuno¹, Kazuaki Ikeda¹, Takashi Oozeki¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 2. Hokkaido University of Science (Japan), 3. National Research Institute for Earth Science and Disaster Resilience (NIED) (Japan))

[Th3-P21-28]

Detecting and analysis of the micro-waviness of the solar cells inside the 3D curved PV module

*Kenji Araki¹, Yasuyuki Ota¹, Shota Matsushita¹, Yuhi Honda¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

[Th3-P21-29]

PV on Heavy Duty Vehicles (HDVS): Implementation Guidelines and Optimum Designs

*Kenji Araki¹, Taiyou Niina¹, Takumi Konuma², Makoto Tanaka³, Yasuyuki Ota¹, Shiro Sakamoto², Kensuke Nishioka¹ (1. University of Miyazaki (Japan), 2. Systec (Japan), 3. PVTEC (Japan))

[Th3-P21-30]

Reliability of performance and appearance of colored BIPV modules after outdoor exposure

Kimihiko Saito², Michio Kondo³, Keiichiro Sakurai⁴, *Akira Terakawa¹ (1. Photovoltaic Power Generation Technology Research Association (PVTEC) (Japan), 2. Fukushima University (Japan), 3. Waseda University (Japan), 4. National Institute of Advanced Industrial Science and Technology (AIST))

[Th3-P21-31]

Resilience by Battery and Solar Electric Vehicles

*Kenji Araki¹, Soma Kawate¹, Yasuyuki Ota¹, Kensuke Nishioka¹ (1. University of Miyazaki (Japan))

[Th3-P21-32]

Manufacturing Technology and Thermal Analysis of Lightweight Shingled Photovoltaic Module for BIPV

*SEO HEE HWANG¹, JAE HYEONG LEE¹ (1. SungKyunKwan University (Korea))

[Th3-P21-33]

TCAD Simulation and low-temperature fabrication of ultrathin semi-transparent a:Si:H based solar cells for building integrated photovoltaic applications.

Ashish Kumar Patel¹, Manvendra Singh Gangwar¹, Tulisram Madkani¹, Anterdipan Singh¹, *Pratima Agarwal¹ (1. Dept. of Physics, IIT Guwahati (India))

[Th3-P21-34]

Integration of Dye-sensitized Photovoltaics with Smart LED Lighting System for Recycling Unused Light Energy in mW Scale

*Hyeong Cheol Kang¹, Francis Kwaku Asiam¹, Ashok Kumar Kaliamurthy¹, Jae-Joon Lee¹ (1. Research Center for Photoenergy Harvesting & Conversion Technology (phct), Department of Energy and Materials Engineering, Dongguk University, Seoul 04620, Republic of Korea. (Korea))

Sub area 2-2: Field Performance of Photovoltaic Systems | Area2: System Engineering and Field Performance : Sub area 2-2: Field Performance of Photovoltaic Systems

📅 Thu. Nov 14, 2024 2:00 PM - 3:30 PM JST | Thu. Nov 14, 2024 5:00 AM - 6:30 AM UTC 🏛️ PS-12/Multipurpose Hall (1F)

[Th3-P22] Sub area 2-2: Field Performance of Photovoltaic Systems

[Th3-P22-01]

Performance assessment of decommissioned photovoltaic modules from utility-scale solar power plants in Thailand

*Amornrat Limmanee¹, Nuttakarn Udomdachanut¹, Rangson Pluemkamon¹, Saifon Kotesopa¹, Pratan Kosuwan¹, Sampan Sivavorapan¹, Nopphadol Sitthiphol¹ (1. ENTEC, National Science and Technology Development Agency (Thailand))

[Th3-P22-02]

First Approximations for Cleaning of Soil Accumulated at Australian PV Sites

*Abhnil Amtesh Prasad¹, Brendan Wright¹, John Rodriguez¹, Ziv Hameiri¹, Merlinde Kay¹ (1. University of New South Wales (Australia))

[Th3-P22-03]

Investigation of seasonal dust accumulation intensity at four PV power plants surrounded by different types of agricultural areas in a hot and humid climate

*Nattakarn Sakarapunthip¹, Tanokkorn Chenvidhya¹, Surawut Chuangchote², Dhirayut Chenvidhya¹, Buntoon Wiengmoon³, Yaowanee Sangpongsanont¹ (1. CES Solar Cells Testing Center, Pilot Plant Development and Training Institute, King Mongkut's University of Technology Thonburi (Thailand), 2. Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi (Thailand), 3. Department of Physics, Faculty of Science, Naresuan University (Thailand))

[Th3-P22-04]

Mitigating photovoltaic soiling effects: Field evaluation of a potential hydrophobic nano-coating

*Tarik Alkharusi¹, Giuseppe Russo², Chandan Pandey¹, Benjamin H. W. Teo¹, Christos N. Markides¹ (1. Imperial College London (UK), 2. University of Naples Federico II (Italy))

[Th3-P22-05]

Characteristics, Compositions, and Effects of Dust Accumulated on PV Panels in Tropical Agricultural Area

Nattakarn Sakarapunthip¹, Tanokkorn Chenvidhya¹, Dhirayut Chenvidhya¹, Krissanapong Kirtikara¹, *Surawut Chuangchote¹ (1. King Mongkut's University of Technology Thonburi (Thailand))

[Th3-P22-06]

Optimizing Power Generation from East-West Oriented Photovoltaic Systems on Industrial Complex Roofs: A Comparative Analysis

*Jeonghun Park¹, Chang-Sik Son¹, Donghyun Hwang¹ (1. Silla University (Korea))

[Th3-P22-07]

On-site PR Testing

*Sicheng Wang¹ (1. Energy Research Institute, NDRC (China))

[Th3-P22-08]

PV Power On-Site Accurate Testing Methods

*Sicheng Wang¹ (1. Energy Research Institute, NDRC (China))

[Th3-P22-09]

Investigating performance indicators for grid-scale photovoltaic power plant in India

*NIKHIL PATTATH GOPI¹, ARUP DHAR¹, RAHUL PACHAURI¹, JAIPRAKASH SINGH¹ (1. National Institute of Solar Energy (India))

[Th3-P22-10]

Optimal weeding scheduling using direct and diffuse irradiances for maximum annual power generation of large-scale photovoltaic power plant

Shigeomi Hara¹, *Kento Sugiyama¹, Masayuki Kawakubo² (1. Saga University (Japan), 2. Saga Yoshinogari Solar LLC (Japan))

[Th3-P22-11]

Comparison of used PV degradation of different PV technologies using I-V characteristics

*Tanokkorn Chenvidhya Chenvidhya¹, Buntoon Wiengmoon², Yaowanee Sangpongsanont¹, Ballang Muenpinij¹, Manit Seapan¹, Dhirayut Chenvidhya¹ (1. King Mongkut's University of Technology Thonburi (Thailand), 2. Naresuan University (Thailand))

[Th3-P22-12]

Modelling photovoltaic system output using ERA5 reanalysis data validated with high-resolution actual measurements

*Usman Yahaya¹, Dhirayut Chenvidhya¹, Tanokkorn Chenvidhya¹, Yaowanee Sangpongsanont¹, Ballang Muenpinij¹ (1. CES Solar Cells Testing Center, Pilot Plant Development and Training Institute, King Mongkut's University of Technology Thonburi (Thailand))

[Th3-P22-13]

Annual degradation rates of five PV technologies over 12.5 years in Japan

*Tetsuyuki Ishii¹, Yasuo Chiba², Minoru Akitomi², Ritsuko Sato², Sungwoo Choi², Atsushi Masuda³ (1. Central Research Institute of Electric Power Industry (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Niigata University (Japan))

[Th3-P22-14]

How PV panel imaging under snowy conditions can help estimate the performance ratio

*Issam Smaine^{1,2}, Maxime Darnon³, Gwenaëlle Hamon^{1,2}, Jean-François Lerat^{1,2} (1. Université de Sherbrooke (Canada), 2. Institut Interdisciplinaire d'Innovation Technologique (Canada), 3. Univ St-Etienne (France))

[Th3-P22-15]

Integrating melting effects in Marion snow loss model

*Mebrahtom Woldelibanos Beraki^{1,2}, Issam SMAINE^{1,2}, Maxime Darnon^{1,2,3}, Jean-François Lerat^{1,2}, Gwenaëlle Hamon^{1,2} (1. Institut Interdisciplinaire d'Innovation Technologique (3IT), Université de Sherbrooke, 3000 Boulevard Université, Sherbrooke, Québec J1K OA5, Canada (Canada), 2. Laboratoire Nanotechnologies Nanosystèmes (LN2) - CNRS UMI-3463, Université de Sherbrooke, 3000 Boulevard Université, Sherbrooke, Québec J1K OA5, Canada (Canada), 3. Laboratoire Hubert Curien, Univ St-Etienne (France))

[Th3-P22-16]

Effective irradiance correction for performance loss rate analysis of PV systems

Adham El Zaher¹, *Loic Guillemot¹ (1. TotalEnergies OneTech (France))

[Th3-P22-17]

Analysis of output characteristics of solar modules according to long-term reliability test

*YOUNG-CHUL JU¹, SUK-HWAN KO¹, HYE-MI HWANG¹, WOO-GYUN SHIN¹ (1. KOREA INSTITUTE OF ENERGY RESEARCH (Korea))

[Th3-P22-18]

Module tilt-dependent snow accumulation and shading of photovoltaics in subarctic Sweden

*Alexander Granlund¹, Mattias Lindh¹ (1. RISE Research Institutes of Sweden (Sweden))

[Th3-P22-19]

Correlation analysis on the convective heat transfer coefficient of outdoor solar panels and nearby weather data

*Kenji Kamide¹, Ryoji Funahashi¹, Tomoyuki Urata¹, Katsuto Tanahashi¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[Th3-P22-20]

Fault diagnosis of PV system using machine learning

*Woogyun Shin¹, Youngchul Ju¹, Hyemi Hwang¹, Sukwhan Ko¹ (1. Korea Institute of Energy Research (Korea))

[Th3-P22-21]

Research on fault diagnosis of photovoltaic array based on current-voltage conversion

*Xiang Chen¹, Kun Ding¹, Meng Jiang¹, Jingwei Zhang¹ (1. College of Mechanical and Electrical Engineering, Hohai University (China))

[Th3-P22-22]

Study of Remote Safety Diagnosis System for DC part of a PV Power Generation Facility

*Yuhsuke Toda¹, Teruo Ikeda¹, Kenji Arimatsu² (1. ITES Co.,Ltd. (Japan), 2. Tohoku Electric Power Co.,Inc. (Japan))

[Th3-P22-23]

Failure detection of Photovoltaic system installed in desert climate

Amir A. Abdallah¹, *Maulid M. Kivambe¹, Claudia Buerhop-Lutz² (1. Qatar Environment and Energy Research Institute (Qatar), 2. Forschungszentrum Juelich GmbH, Helmholtz Institute Erlangen-Nuernberg for Renewable Energy (Germany))

[Th3-P22-24]

Study The Impact of Lightning-Induced Over Voltages on Photovoltaic System Using a Lightning Impulse Generator

Prakasit Sritakaew¹, *Wuttikai Tammawan¹, Thanet Sriprom², Anon Namin², Ekkachai Chaidee¹, Wiwat Tippachon¹, Jutturit Thongpron², Uthen Kamnarn², Kosol Oranpiroj², Teerasak Somsak², Worrajuk Muangjai², Wichet Thipprasert¹ (1. Faculty of Electrical Engineering, Rajamangala University of Technology Lanna (RMUTL) Chiang Rai, Thailand (Thailand), 2. Faculty of Electrical Engineering, Rajamangala University of Technology Lanna (RMUTL) Chiang Mai, Thailand (Thailand))

[Th3-P22-25]

Fault diagnosis of photovoltaic arrays based on distance characterization of I-V curves

*Kun Ding¹, Zenan Yang¹, Xiang Chen¹, Jingwei Zhang¹, Shang Cao² (1. College of Mechanical and Electrical Engineering, Hohai University, Changzhou (China), 2. Changzhou Key Laboratory of Photovoltaic System Integration and Production Equipment Technology, Changzhou (China))

[Th3-P22-26]

Remote fault detection method for residential PV systems through comparative analysis

*Yohei Sumikoshi¹, Yuzuru Ueda¹ (1. Tokyo University of Science (Japan))

[Th3-P22-27]

Assessing Degradation Trends of Residential Photovoltaic Systems and Their Drivers Across Australia

Ali Shakiba¹, Abhnil Prasad¹, *Brendan Wright¹, Nargess Nourbakhsh¹, Mike Roberts¹, Ziv Hameiri¹ (1. University of New South Wales (Australia))

[Th3-P22-28]

A comparison of different means for measuring insulation resistance between photovoltaic arrays and the earth: the "self-biased method" and the "low frequency AC current injection technique"

*Takuro Kazama^{1,2}, Kazuhiko Kato^{1,3} (1. University of Tsukuba (Japan), 2. Hikari Trading Co., Ltd. (Japan), 3. National Institute of Advanced Industrial Science and Technology (Japan))

[Th3-P22-29]

Prediction of remaining useful life of photovoltaic array based on extracted model parameters

Shang Cao¹, *Jingwei Zhang¹, Kun Ding¹, Xiang Chen¹, Anees Ur Rehman², Zenan Yang¹, Yongjie Liu³ (1. College of Mechanical and Electrical Engineering, Hohai University (China), 2. College of Agricultural Science and Engineering, Hohai University (China), 3. Changzhou Key Laboratory of Photovoltaic System Integration and Production Equipment Technology (China))

[Th3-P22-30]

Calculation of Photovoltaic Systems Installation Potential in Planted Trees and Prioritizing Suitable Locations using Analytic Hierarchy Process Method

*Sari Takahashi¹, Ryuto Shigenobu¹, Akiko Takahashi¹, Masakazu Ito¹, Masanobu Yoshidomi² (1. University of Fukui (Japan), 2. Yoshidomi Electric Co., Ltd. (Japan))

[Th3-P22-31]

Digital-Twins of Utility PV Systems: PVsyst-based Model Limitations and Implications

*Brendan Foster Wright¹, Sijin Wang¹, John Rodriguez¹, Ziv Hameiri¹ (1. University of New South Wales (Australia))

[Th3-P22-32]

Variable performance loss rates at different times of the day in a utility-scale PV system

Ali Shakiba¹, *Brendan Wright¹, John Rodriguez¹, Ziv Hameiri¹ (1. University of New South Wales (Australia))

[Th3-P22-34]

Reliability study on no-gap module with encapsulation material research

*Dongchul Suh¹, Sungho Hwang², Young-su Kim³, Yoonmook Kang² (1. Hoseo University (Korea), 2. Korea University (Korea), 3. Research Institute of Industrial Science and Technology (Korea))

[Th3-P22-35]

Reinforcement on thermal dissipation characteristics of bypass diode encapsulated by graphite-mixed silicone potting

*Jiwon Song¹, Jaehwan Ko¹, Seong-Hyeon Kim¹, Hyung-Jun Song¹ (1. Seoul National University of Science and Technology (Korea))

[Th3-P22-36]

Development of flame-retardant polyolefin based encapsulants and application to modules

*Shiori Shinozaki¹, Ken Murasawa¹, Motonobu Hamagami¹, Atsuo Tsuzuki¹, Akihiro Hayakawa¹, Shigehiro Ueno¹, Taiki Takayama¹ (1. Dai Nippon Printing Co., Ltd. (Japan))

[Th3-P22-37]

The deviation of the *I-V* parameters predicts the type of failure of PV modules

*MANIT SEAPAN¹, Dhirayut Chenvidhya¹, Yaowanee Sangpongsanont¹, Kittipob Wiriyavorawet¹, Krissanapong Kirtikara¹ (1. CES Solar Cells Testing Center, Pilot Plant Development and Training Institute, King Mongkut's University of Technology Thonburi (Thailand))

[Th3-P22-38]

The correlation of EL image and shunt resistance of power degradation module installation on the field in Thailand over 10 years

*Yaowanee - Sangpongsanont¹, Manit Seapan¹, Tanokkorn Chenvidhya¹, Krissanapong Kirtikara¹, Dhirayut Chenvidhya¹, Ballang Muenpinij¹, Panusorn Polchai¹ (1. CES Solar Cells Testing Center (CSSC), Pilot Plant Development and Training Institute (PDTI), King Mongkut University of Technology Thoburi (KMUTT) (Thailand))

[Th3-P22-39]

Effectiveness of the Sky View Factor for power generation estimation method for vertically installed Bifacial PV modules

*Atsushi Goto¹, Ryuto Sigenobu¹, Akiko Takahashi¹, Masakazu Ito¹, Takashi Oozeki², Kyungsoo Lee³ (1. University of Fukui (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. Tech University of Korea (Korea))

[Th3-P22-40]

Comparative Analysis of Crystalline Silicon and Bifacial Photovoltaic Systems in Thailand.

*sasiwimon songtra¹, Perawut Chinnavornrungrong², Vichit Saengsuwan², Supoj Sodarath², Sirimongkon Sangkhawong², Nuwong Chollacoop², Phasapon Manosukritkul³, Wangpai Lewtaveesap⁴, Kobsak Sriprapha¹ (1. National Electronics and Computer Technology Center (Thailand), 2. National Energy Technology Center (Thailand), 3. King Mongkut's Institute of Technology Ladkrabang Prince of Chumphon Campus (Thailand), 4. Advanced wireless network company limited (Thailand))

[Th3-P22-41]

Comparative Study of Bifacial PERC and Heterojunction Modules for the Semi-Arid Climate

*IMANE FLOUCHI FLOUCHI¹ (1. Green energy park (Morocco))

[Th3-P22-42]

Establishing a 5kW Building-Integrated Photovoltaic System Using Shingled Solar Modules

*Minseob Kim^{1,2}, Sungmin Youn¹, Min-Joon Park¹, Eunae Jo¹, CheolYeong Park¹, kiseok Jeon^{1,3}, Jinho Shin^{1,2}, Eunbi Lee^{1,3}, Yu-Jin Kim^{1,2}, Chaehwan Jeong¹ (1. Korea Institute of Industrial Technology (Korea), 2. Chonnam national university (Korea), 3. Yonsei University Seoul (Korea))

[Th3-P22-43]

Performance assessment of Bifacial Photovoltaic device with modified G_E method to enhance measurement accuracy

*Arup Dhar^{1,2}, Birinchi Bora¹, Shazma Malik¹, Vamsi Krishna Komarala², Chandan Banerjee¹ (1. National Institute of Solar Energy (India), 2. Indian Institute of Technology Delhi (India))

[Th3-P22-44]

Novel method for evaluating the performance of cutting-edge bifacial PV modules: HJT, TOPCon, and PERC

*Khadija El Ainaoui¹, Mhammed Zaimi¹, Imane Flouchi², Yasmine El Mrabet², Said Elhamaoui², Abdellatif Ghennioui², El Mahdi Assaid¹ (1. Chouaib Doukkali University (Morocco), 2. Green Energy Park (Morocco))

[Th3-P22-45]

Interpretation of Calculated Degradation Rate Distributions from Nameplate Values of Photovoltaic Modules

*Ruchita Korgaonkar¹, Narendra Shiradkar¹ (1. Indian Institute of Technology, Bombay (India))

[Th3-P22-46]

Development of recovery techniques for Si PV module performance using spot induction heating

*Yu Kawano¹, Takashi Minemoto¹ (1. Ritsumeikan University (Japan))

[Th3-P22-47]

Study on the different procedures for stabilization of reference solar cells

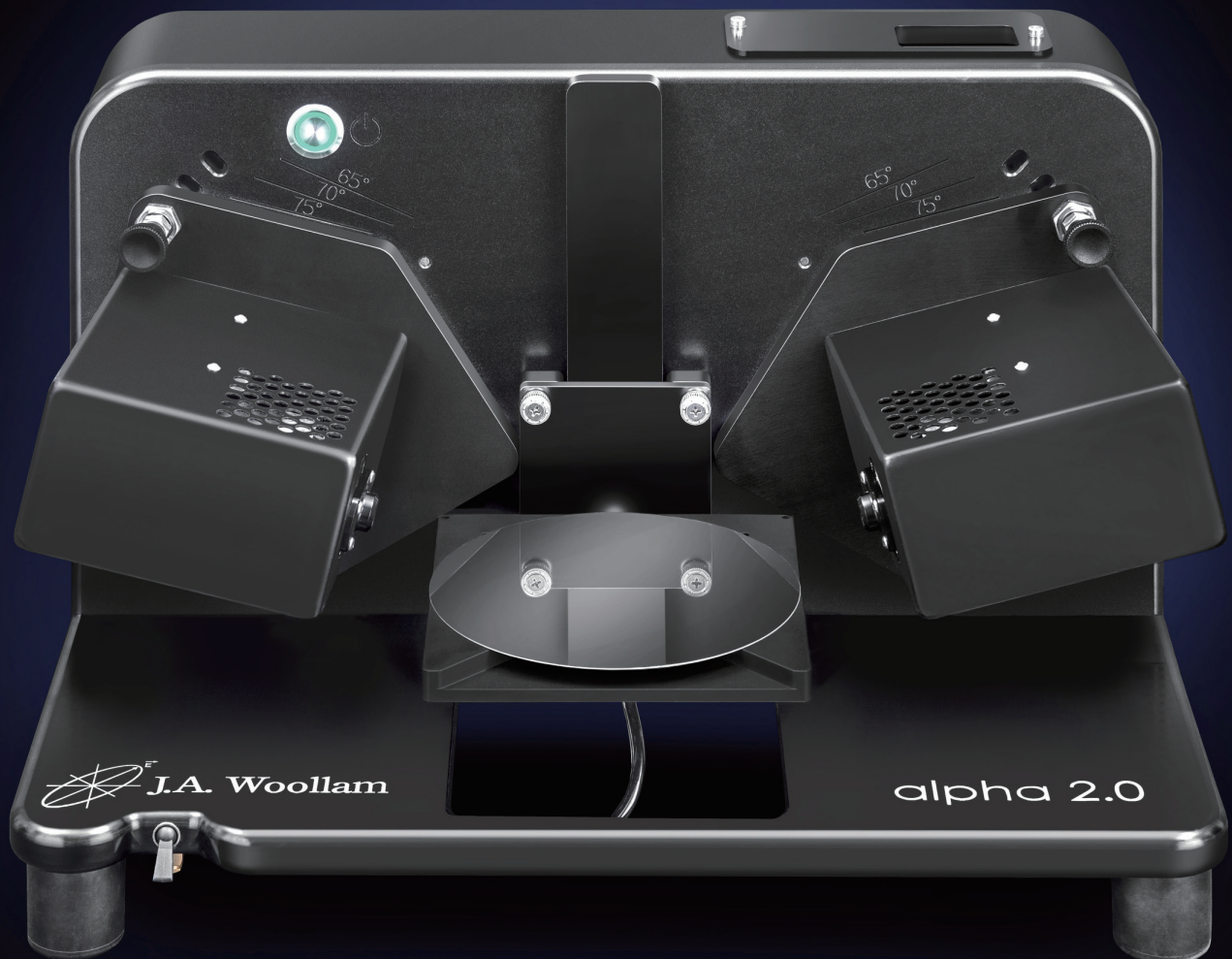
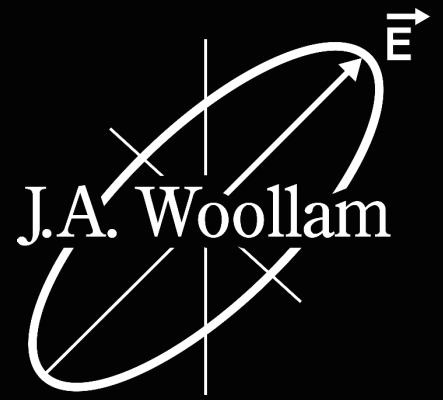
*Shazma Malik¹, Birinchi Bora¹, Arup Dhar^{1,2}, Chandan Banerjee¹ (1. National Institute of Solar Energy (India), 2. Indian Institute of Technology Delhi (India))

[Th3-P22-48]

Performance and simulation study on vertical & agri-PV installations

*Samuel Douillez¹, Hugo Ronaldo Paipa Chaparro¹, Arthur Poquet¹, Martin Poveda¹ (1. TotalEnergies)

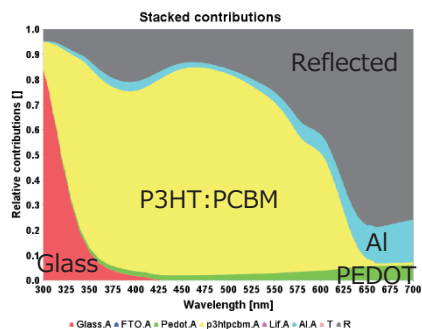
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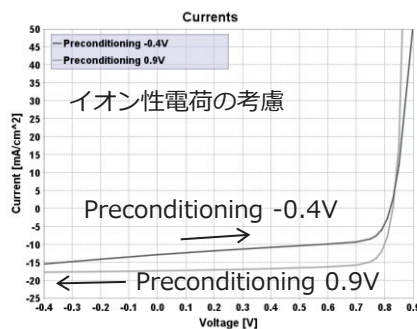
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Setfos

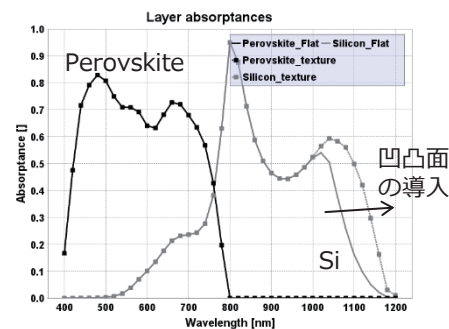
- 有機EL・ペロブスカイト太陽電池・有機太陽電池デバイス設計のための電気・光学シミュレーションソフトウェア
- 発光・吸収特性、電流電圧特性などのシミュレーション



層ごとの吸収割合の波長依存性



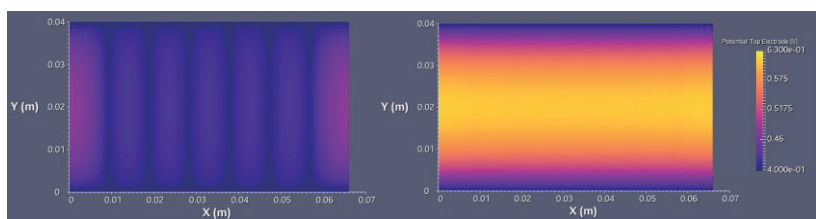
ペロブスカイト太陽電池 IV特性



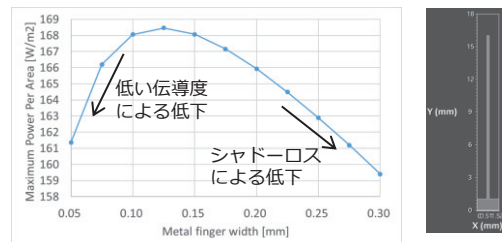
タンデム型太陽電池 活性層吸収率

Laoss

- 有機EL・太陽電池パネルにおける電極の電圧降下を解析
- 光線追跡法による光学シミュレーション



太陽電池パネル表面の電位分布(左:補助電極あり 右:補助電極なし)
補助電極の導入により、電位分布が減少

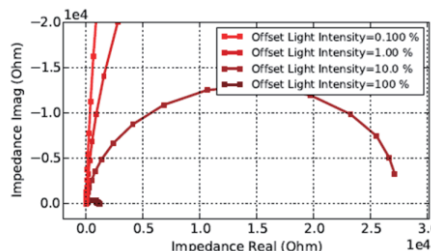


太陽電池 最大電力のフィンガー電極幅依存性

Paios

- ワンクリックで10種類以上の電気・光学測定を自動で実行
- Setfosを利用したパラメータ抽出

測定例: IVL・発光スペクトル・インピーダンス分光・CELIV等



インピーダンス分光測定結果例

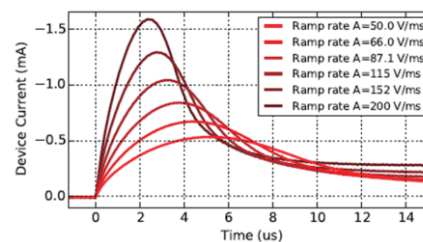


Photo-CELIV測定結果例

Litos Lite

- 太陽電池デバイス耐久性評価装置
- MPP・一定電圧・一定電流下で駆動し、断続的に電流電圧特性を計測



Litos Lite (太陽電池向け)

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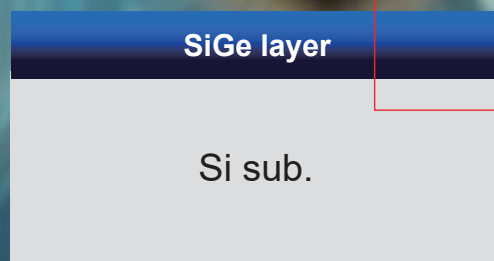
- ***For Device*** Excellent semiconductor properties of SiGe
- ***For Substrate*** Lattice Constant Si 5.431 Å ~ Ge 5.658 Å
- ***For Large Area*** ~Up to 8 inches
- ***Examples of Applications***

High-Speed CPU, 5G-6G Communication, Automotive Radar, Compound Semiconductor Device Substrate

➤ ***Products images***



SiGe/Si sub.



SiGe/Si sub. Cross-section



SiGe/Si sub. SEM image



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Giving families peace of mind. Keeping harmony between people.

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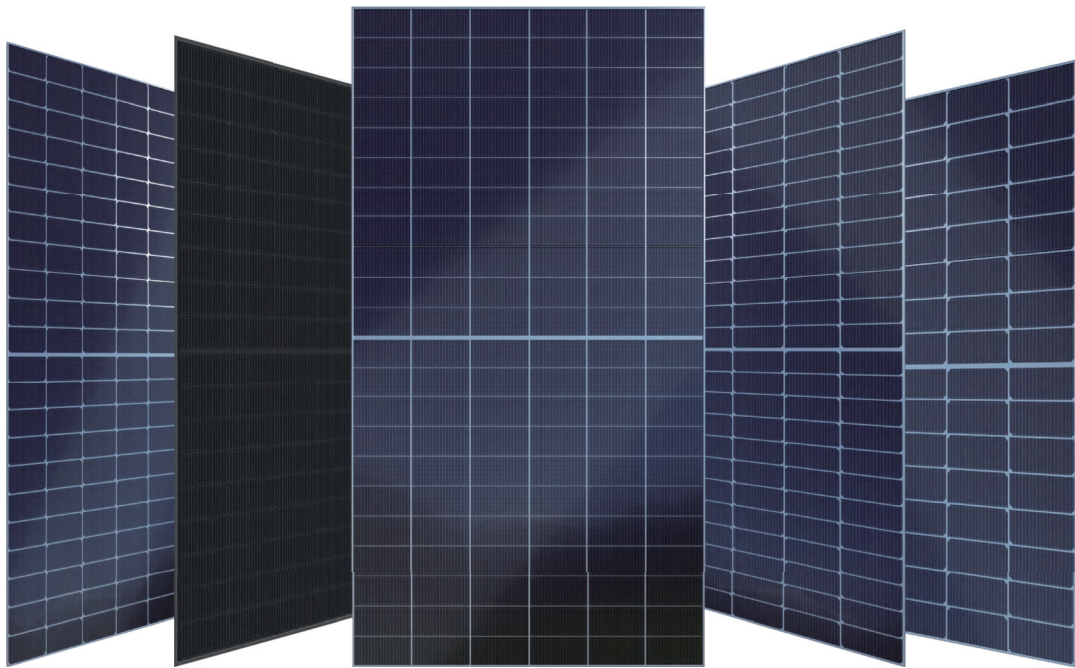
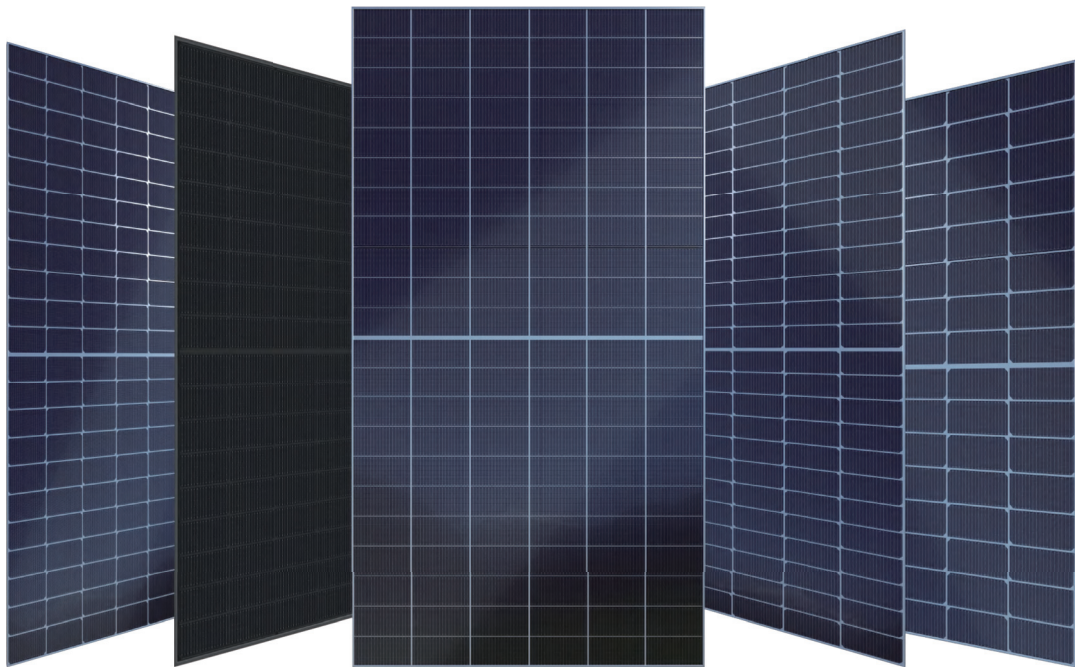
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Zhejiang WINHITECH New Energy Co., Ltd. (hereinafter referred to as WINHITECH) is an HJT oriented new energy company, It was jointly established with investments from the Central and State-owned enterprises (China Resources Power Logistics Co., Ltd., Zhoushan Ocean Comprehensive Development Investment Co., Ltd.). The project is located in Zhoushan High-tech Industrial Park, With the biggest "30GW High-Efficiency Heterojunction Solar Cell and 15GW Module Production Equipment Application Demonstration Project" in China.

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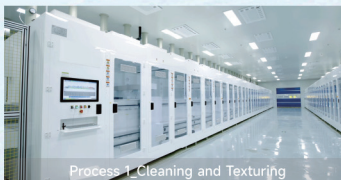
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Process 4_Cell Metallization

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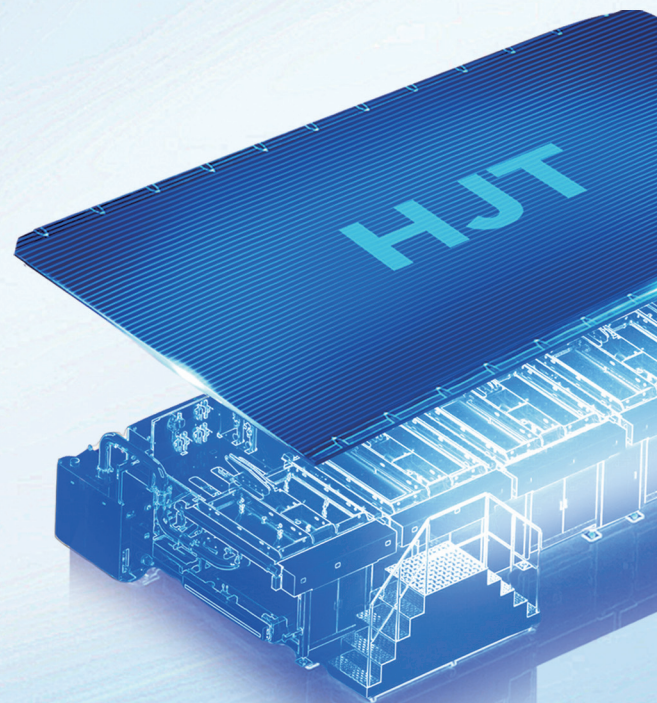
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^[1] Source: TaiyangNews Top Modules

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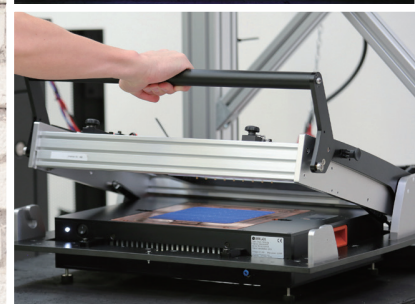
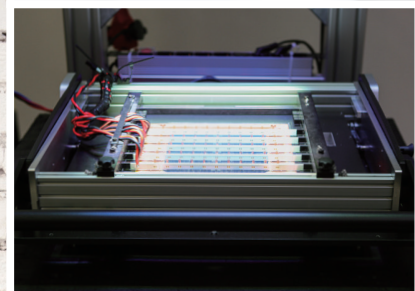


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PEALD System



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- High stability
- Convenient maintenance



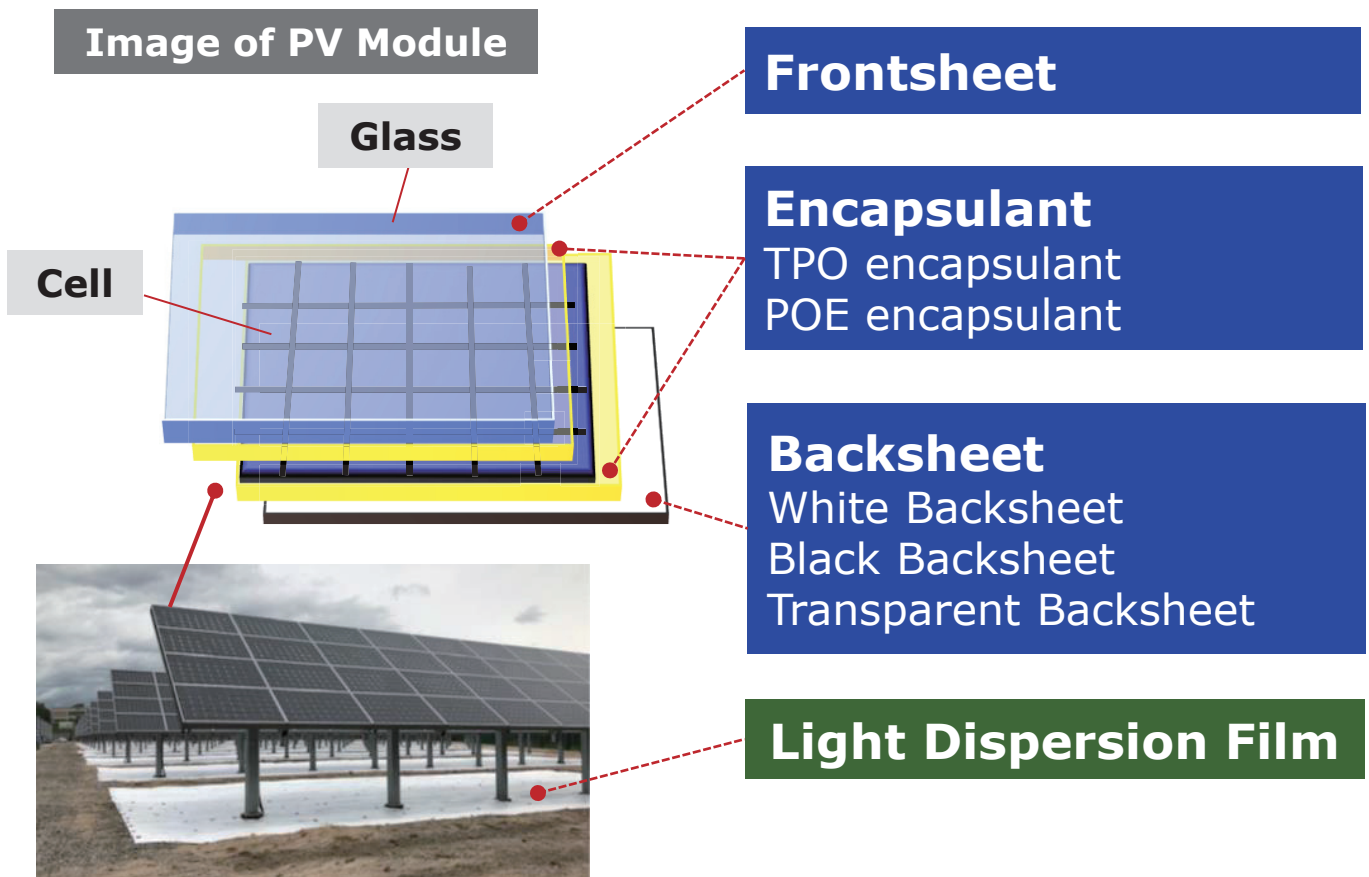
- Independent R&D team
- Sustainable technical support



- Novel Intelligent ALD systems
- Independent intellectual property



- Provide fully integrated solutions
- High efficiency and low cost



Frontsheet

- High optical transmittance, long-term reliability

Encapsulant

- High optical transmittance, long-term reliability, PID-free
(Without generating acidic gas, low water vapor permeability)

Backsheet

- White Backsheet: Long-term reliability
- Black Backsheet: Power generation improvement by reflecting infrared
- Transparent Backsheet: High optical transmittance, long-term reliability

Light Dispersion Film

- Power generation improvement by increasing albedo
(Combination use of bifacial module and the Light Dispersion Film)



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