Program Book

International Symposium on Solar Energy 2025 (ISSE 2025)

Welcome to Fukuoka!

Date: 2025.7.23 (Wednesday) - 2025.7.24 (Thursday)

Venue: Hall A&B, I2CNER, Kyushu University, Japan

Organizer: Zhanglin Guo, Toshinori Matsushima

Contact: guo.zhanglin.903@m.kyushu-u.ac.jp; +81-092-802-6880

ISSE 2025 Homepage https://i2cner.kyushu-u.ac.jp/~guo/ISSE.html

July 23rd (Wednesday)

9:30-9:40 Opening remark

Session Chair: Zhiping Wang

9:40-10:00 *Tsutomu Miyasaka* (Toin University of Yokohama)

Interface molecular engineering and the design of perovskite solar cells without charge transport layers

10:00-10:20 *Tzu-Chien Wei* (National Tsing Hua University)

Recycling PbI_2 from failed or unfinished perovskite modules

10:20-10:40 *Peng Gao* (Fujian Institute of Research on the Structure of Matter, CAS)

Design of High-Performance Interfacial Dipole Molecules in c-Silicon/Perovskite Tandem Devices

10:40-11:00 *Zonglong Zhu* (City University of Hong Kong)

Advancing Long-Term Stability of Halide Perovskite Solar Cells Through Interface Engineering: Mechanistic Insights and Emerging Strategies

11:00-11:20 *Zeguo Tang* (Shenzhen Technology University)

Interface passivation research in high-efficiency perovskite solar cells

11:20-11:35 *Jeffy Lee* (KOREAKIYON Co., Ltd.)

Technology of KOREA KIYON's Deposition System Integrated into Glovebox at the Field of Batteries and Solar Cell R&D

11:35-13:00 Lunch Break

Japanese Lunchbox (Hall of I2CNER)

Session Chair: Zonglong Zhu

13:00-13:20 *Shuzi Hayase* (The University of Electro-Communications)

Stability improvement of tin based perovskite solar cells

13:20-13:40 *Qing Shen* (The University of Electro-Communications)

Understanding and Engineering Defects in Sn-Based Perovskite Nanocrystals and Solar Cells

13:40-14:00 *Dong-Won Kang* (Chung-Ang University)

Effect of Inorganic Additive Incorporation on the Efficiency Enhancement of Sn-Pb Perovskite Solar Cells

14:00-14:20 *Tomoya Nakamura* (Kyoto University)

Substrate-independent and antisolvent-free film fabrication method for efficient tin perovskite solar cells

14:20-14:40 *Qing Wang* (Kyushu University)

Thermodynamic stability and defect trapping activity in Lead-free halide perovskites

14:40-16:00 Coffee Break / Poster Session

Session Chair: Toshinori Matsushima

16:00-16:20 *Kaoru Tamada* (Kyushu University)

Potential Applications of Self-assembled Nanomaterials in Optoelectronic Devices

16:20-16:40 *Tingli Ma* (Kyushu Institute of Technology)

Interface Passivation of Perovskite Solar Cells for Improving Performance

16:40-17:00 *Ayumi Ishii* (Waseda University)

Spin-Induced Photo-Electric Functions in One-Dimensional Helical Perovskite

17:00-17:10 Group photo at the Hall

17:30 Shuttle Bus to Banquet Location

18:00-20:00 Banquet

20:00 Shuttle Bus to Kyudaigakkentoshi JR station

July 24th (Thursday)

Session Chair: Seigo Ito

10:00-10:20 *Hong Lin* (Tsinghua University)

New Self-Assembled Monolayers for Dynamic Buried Interface Optimization in High-Performance Perovskite Solar Cells

10:20-10:40 *Jingbi You* (Institute of Semiconductors, CAS)

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

10:40-11:00 *Zhiping Wang* (Wuhan University)

Tailoring charge carrier dynamics for enhanced performance in metal-halide perovskite solar cells

11:20-11:40 *Gyumin Kim* (Hankyong National University)

Advancements in Perovskite Solar Cells: From Dopant-Free Hole Transport Materials to Stability-Enhanced Hybrid Perovskites

11:40-13:00 Lunch Break

Japanese Lunchbox (Hall of I2CNER)

Session Chair: Satoshi Uchida

13:00-13:20 *Seigo Ito* (University of Hyogo)

Very-Stable Carbon-Based Multiporous-Layered-Electrode Perovskite Solar Cells

13:20-13:40 *Xin Li* (Xiamen University)

Stable inverted flexible perovskite solar cells based on NiOx

13:40-14:00 *Yue Hu* (The University of Edinburgh)

Carbon electrode perovskite solar cells

14:00-14:20 *Manabu Sugimoto* (Kumamoto University)

Applications of AI technologies and computer simulations toward optimization

of perovskite solar cells

14:20-14:40 *Chu-Chen Chueh* (National Taiwan University)

Organic-Inorganic Hybrid Perovskites for Optoelectronic Applications beyond Photovoltaics

14:40-15:00 Coffee Break

Session Chair: Chu-Chen Chueh

15:00-15:20 *Akinori Saeki* (Osaka University)

Automated Experimental Approach to Lead-Free Solar Cells and Lead Halide Perovskite Solar Cells

15:20-15:40 *Satoshi Uchida* (The University of Tokyo)

Capacitance Analysis Inside Perovskite Solar Cells

15:40-16:00 *Itaru Raifuku* (Aoyama Gakuin University)

Characterization of perovskite solar cells using imaging methods

16:00-16:20 *Yuan Jay Chang* (Tunghai University)

Interfacial Engineering Using C-3 Alkyl Linker-Based Carbazole-Derived SAMs and Polyarene-Based Hole-Selective Layers to Achieve ~42% Indoor Efficiency in PSCs

16:20-16:25 Closing remark

Poster Session

(July 23rd 14:40-16:00, Hall of I2CNER)

1. Thermally Induced Surface Self Passivation in Tin Perovskite Solar Cells
   Jiaqi Liu (The University of Electro-Communications)
2. Optimizing Buried Interfaces in Efficient Perovskite Solar Cells Using Conjugation-Extended Hole-Selective Materials with 2D Alkylamine Modification
   Ming-Hsuan Yu (National Taiwan University)
3. Comprehensive Analysis of 3C alkyl linker-based Carbazole-derived Edge-on-SAM Layers: Realizing 41.77 % Indoor Efficiency in Wide-Bandgap Perovskite Solar Cells
   Yu Hsuan Lin (Tunghai University)
4. Circularly Polarized Light Detection Using Pb(II)/Bi(III)/Te(IV)-based One-dimensional Helical Perovskite Thin Films
   Hikari Suzuki (Waseda University)
5. Control of Spatial Inversion Symmetry Breaking in One-dimensional Helical Perovskite Single Crystals Using Organic Chiral Molecules
   Daiki Nakamura (Waseda University)
6. Luminescence Property of Lanthanide-doped Perovskite Nanomaterials
   Shuhei Matsumura (Waseda University)
7. Light-induced degradation on Silver Bismuth Iodide Rudorffites
   Natalia Correa (Toin University of Yokohama)
8. Chlorophyll-Derived Polymeric HTMs for Efficient and Stable Inverted Perovskite Solar Cells
   Ziyan Liu (Toin University of Yokohama)
9. NiOx-SAM Inverted Perovskite Solar Cells: Scaling from Small Devices to 5×5 Mini-Modules
   Vo Ngoc Anh Tho (National Tsing Hua University)
10. Low-temperature fabrication of efficient plastic perovskite solar cells

Ngo Thi Ha Phuong (National Tsing Hua University)

11. Enhancing performance of MAPbI3-based module through CsI/MABr Doping and Interface Passivation
    Đức Anh Lê (National Tsing Hua University)

12. Mitigation of halide phase segregation in mixed-halide perovskite solar cells via single crystal precursor
    Shafna Kunnathum Peedika (National Tsing Hua University)

13. Intrisically additive incorporating perovskite and hole transport material powder synthesis for high efficiency perovskite solar cell
    Jinyoung Kim (Sogang University)

14. The Effects of Vacuum-Assisted Thermal Annealing on MACl-NMP-Based Sn-Pb Perovskite Solar Cells
    Joohwan Kim (Sogang University)

15. Li-TFSI Doping Optimization in the Hole Transport Layer Depending on the Presence or Absence of an Interlayer in Perovskite Solar Cells
    Juwon Kim (Hankyong National University)

16. Grain Surface Passivation for Efficient and Stable Inorganic Ultrawide-Bandgap Perovskite Solar Cells
    Siliang Cao (NIMS and University of Tsukuba)

— Sponsor of ISSE 2025 —

Peccell

Mitsui Chemicals

KOREA KIYON

TOKUSHIGE 徳重化学株式会社
TokusigeChemicals Co.,Ltd

For Your Dream & Happiness
ChemMat
NIPPON STEEL Chemical & Material

システム技研 株式会社
SYSTEM ENGINEERS' CO.,LTD.

Peccell *Specializing in printable solar cells*

Peccell Technologies provides materials and equipment to support R&Ds of perovskite solar cells. Our products are developed directly by the inventors of perovskite solar cells (Dr. Miyasaka's group) and his collaborators.

Transparent electrode substrates

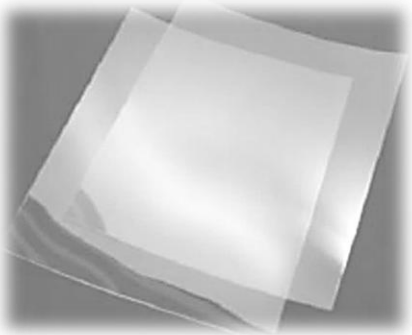
✓ **FTO glass substrate**: thickness 1.1mm (10cm×15cm), resistance <10Ω/ sq.

✓ **ITO-PET plastic film*:** thickness 125 μm, transmittance >80%, resistance <15Ω/ sq.

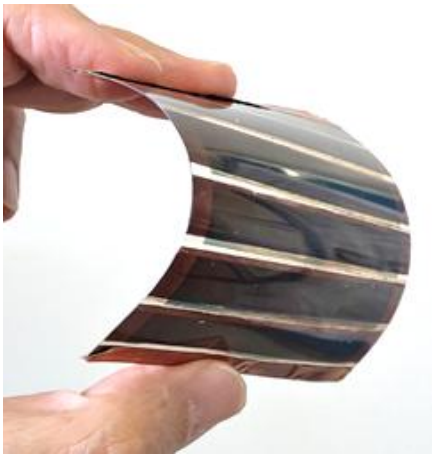
We supply A4-size Sheet or Roll of 30~50 cm (width)× 5~100 m (length)

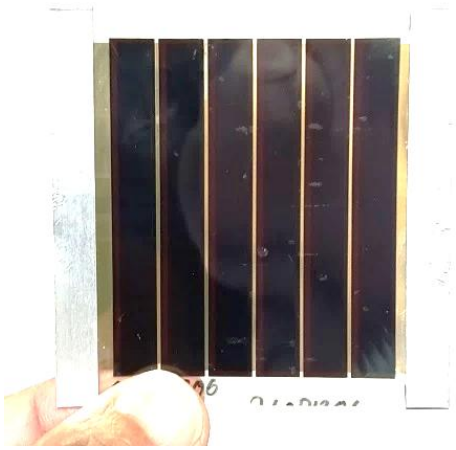
*perovskite solar cell using our ITO-PET film achieves PCE>21%

(Miyasaka, et al. *J. Mater. Chem. A*, 2020)



ITO-PET film cut from roll product (right)



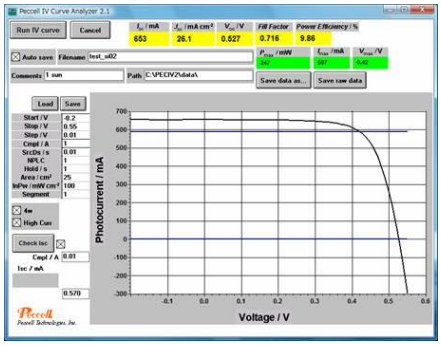


Plastic film perovskite solar cell printed by inkjet printer (see the back page)

Peccell Technologies, Inc.
6F, Shinyurigaoka City Bldg. 1-1-1 Manpukuji, Asao-ku,
Kawasaki, Kanagawa 215-0004, Japan
TEL: 81-44-967-1035　URL: http://www.peccell.com/

Peccell *Specializing in printable solar cells*

Peccell Technologies (since 2004) provides materials and equipment to support R&Ds of perovskite solar cells. Our unique products, developed by Miyasaka group of Toin University of Yokohama, include thin film materials, software for I-V & MPPT measurement, solar simulators, EQE spectrum measurement, automatic spin coater, inkjet printer for perovskite solar cells, etc.



Solar simulator (1 Sun AM1.5, desk top compact size) and I-V curve measurement software

EQE (IPCE) measurement setup (desk top size)

Automatic spin coating robot (wireless control, atmosphere changeable)

Inkjet coating system for perovskite film coating (film pattern designed on PC controller)

MPPT (Maximum Power Point Tracking) Software for PSC

MPPT software is a crucial technology primarily used in solar power systems.
Our company has developed software equipped with an algorithm optimized for MPPT measurement of Perovskite solar cells.

Features:

- The new algorithm enables reliable measurements, even with samples that exhibit significant hysteresis.
- It is ideal for outdoor durability testing of solar cells.
- Compatible with source meters from various manufacturers.

Source meter:

- Keithley 2400/2401/2420
- Keithley 2450 series
- GW Instek GSM-20H10
- ADCMT 6253/6254
- Keysight 2901A
- YOKOGAWA GS200 or others.

System configuration:

- Windows 11
- GPIB, NI-VISA preferable, Keysight VISA library is also compatible.
- Keithley 2400/2401/2420 requires USB-GPIB converter. Other sourcemeters can be connected simply by USB.

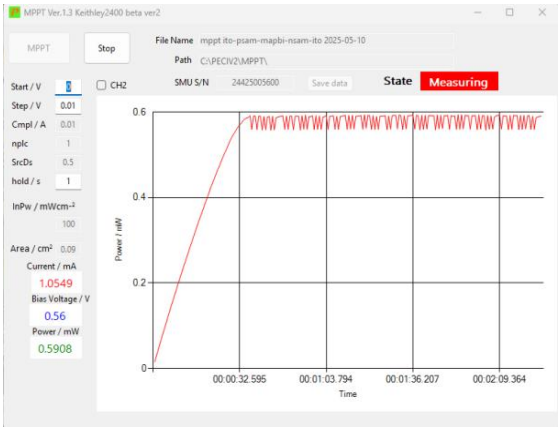
MPPT Parameters (-2ΔV +ΔV method):

The system uses a small voltage step (ΔV) that you set. To find the maximum power point:

- When the voltage decreases, it steps by 2 steps (-2ΔV) to check the power.
- When the voltage increases, it steps by 1 step (+ΔV) to check the power

Data Storage Format:

Measurement data is automatically saved in the folder specified by "Path." The data is divided and saved according to measurement time intervals, with filenames automatically generated.



Related Products:

A simple, low-cost MPPT measurement system using Arduino is also available, capable of measuring multiple solar cells simultaneously.

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6F, Shinyurigaoka City Bldg. 1-1-1 Manpukuji, Asao-ku, Kawasaki, Kanagawa 215-0004, Japan
TEL: 81-44-967-1035 URL: http://www.peccell.com/

The future can change for the better.
Our imagination is the agent of change.

Mitsui Chemicals is driven by relentless curiosity and the wealth of imagination that comes from it.

A more diverse future can be built through the power of the human imagination and chemistry to create something from nothing.

0→1 MAKE IT HAPPEN

Mitsui Chemicals Group

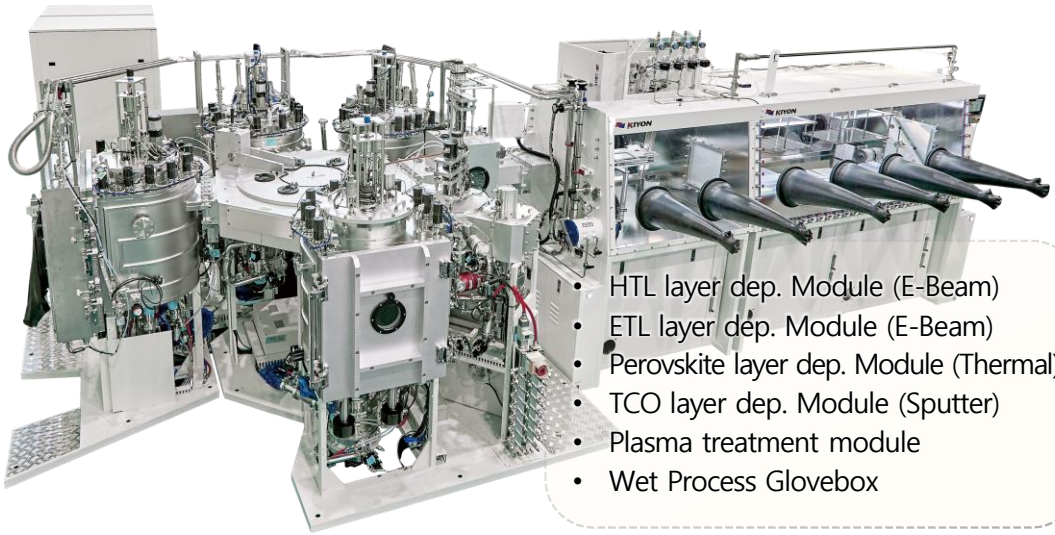
KOREA KIYON

Total Solution Provider for *Perovskite*

Perovskite Solar Cell R&D

- Cost-effective R&D system supporting M6 substrates (30 × 30 × 4 mm)
- Dual thermal EVP with 2 metal / 2 organic chambers (e.g., C60, LiF)
- Space-saving mini-chamber design for compact lab environments
- AFM integrated in glovebox for contamination-free analysis
- Expandable with ALD system for future process integration

CIGS · Perovskite Tandem Solar Cell Cluster System



- HTL layer dep. Module (E-Beam)
- ETL layer dep. Module (E-Beam)
- Perovskite layer dep. Module (Thermal)
- TCO layer dep. Module (Sputter)
- Plasma treatment module
- Wet Process Glovebox

KOREA KIYON

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Seoul, Republic of Korea

Tel. +82-2-2087-3500 Fax. +82-2-2087-3501
E-mail. sales@glovebox.co.kr

Gas/Water Vapor Transmission Rate Analyzer

ガス・水蒸気透過度測定装置（受託分析サービス）

For water vapor and gas transmission testing of perovskite solar cells and related materials, trust MORESCO Corporation.

We provide contract analysis services for WVTR and gas transmission rates using your samples. Permeability and diffusion coefficients can also be calculated upon request. Our services support R&D, production, and quality control.

We handle over 200 analysis requests annually, backed by extensive experience and proven expertise.

System：MORESCO-SuperDetect

Single Chamber Type

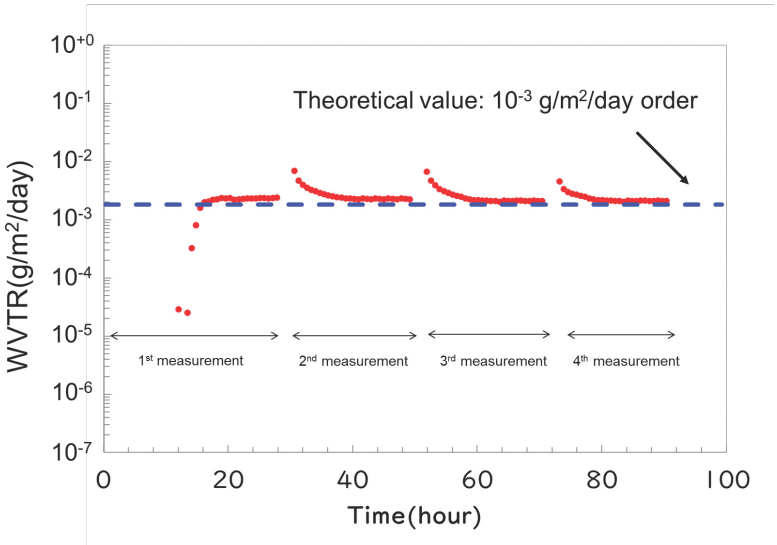
Multi-Chamber Type

- Sample size: Φ=80 mm, t=0.01–1 mm
- Special jig: Φ=20～Φ115mm、t =～5 mm

Actual data

Sample: Calibration film

Condition: 40℃ 90%RH



Sample of 10^{-3} g/m^2/day order can be measured by 4 continuous measurement within 5days.

徳重化学株式会社 (TOKUSHIGE CHEMICALS Co,. Ltd.)

営業部 (Account Specialist) 担当（Contact）: 江島 (Ejima)

〒812-0061 福岡市東区筥松 3 丁目 7-7

(Hakomatsu 3-7-7, Higashiku,Fukuoka-shi,Fukuoka-ken 812-0061, Japan)

TEL: +81-92-621-0088, FAX: +81-92-611-2611, e-mail: ejima@tokusige.jp

Perovskite solar cell Aging system

PAS-100

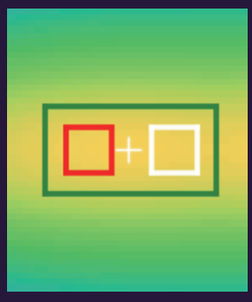
1SUN Aging

Voc, Isc, IVcurve, Jsc, Pmax, FF, Rs, Rsh

⇒ Graph, Calculation, .CSV

Long life by using LEDs

- Highly uniform light using diffusers and multiple LEDs
- Intensity of Irradiation:1SUN
- LED light intensity correction mode by PD

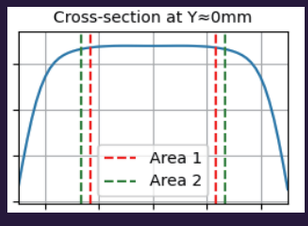


4-ch MPPT per device

- MPPT(Full scan,HC-method), AVC, ACC

Temperature control per device

- Chamber internal temperature uniformity structure
- Peltier Temperature Control of TEST Device (25℃ ~85℃ Expands100℃)

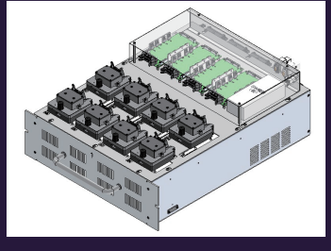


< Custom light distribution design >

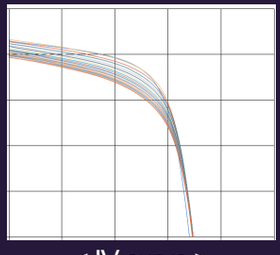
4SMUs per device 4 elements

■ Scalability
- 8 Devices per tray (64ch)
- Max. 5tray 40 Device(160ch per rack)

< Easy set up >



< Tray >



< IV-curve >

Photo.
We delivered this equipment to the International Institute for Carbon-Neutral Energy Research at Kyushu University's Ito Campus.
「Perovskite solar cell Aging system PAS-100 (8CH/32 Device)」
Now with additional tray(16 CH/64 Device).

■ Special specifications
- Glove box type
- Gas flow type
- Desktop type(1ch/2cn)

Custom design available, Contact us for details

システム技研 株式会社
SYSTEM ENGINEERS' CO.,LTD.

〒 242-0008
Techno Plaza Yamato 3-9-10 Chuorinkannishi, Yamato-shi, Kanagawa, JAPAN
TEL : 046-278-3580 / FAX : 046-278-3588
Email : info@systemg.co.jp , hara@systemg.co.jp

< HP >

素材を極め、未来を拓く

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NIPPON STEEL

日鉄ケミカル&マテリアル

NIPPON STEEL Chemical & Material