

PROGRAM

AM-FPD 23

THE THIRTIETH INTERNATIONAL WORKSHOP ON
**ACTIVE-MATRIX
FLATPANEL DISPLAYS AND DEVICES**

-TFT TECHNOLOGIES AND FPD MATERIALS-

July 4 - 7, 2023

Ryukoku University Avanti Kyoto Hall Kyoto, Japan

This workshop is held in hybrid format with Zoom.

Sponsorship:

International Society of Functional Thin Film Materials & Devices

Technical Sponsorship:

The Electrochemical Society - Electronics and Photonics Division -

The Electrochemical Society - Japan Section -

IEEE Electron Devices Society

In cooperation with:

The Japan Society of Applied Physics

The Institute of Electronics, Information and Communication Engineers

The Institute of Image Information and Television Engineers

The Institute of Electrical Engineers of Japan

The Chemical Society of Japan

The Laser Society of Japan

Japanese Liquid Crystal Society

Thin Film Materials & Devices Meeting

Society of Automotive Engineers of Japan, Inc.

Society for Information Display

Molecular Electronics and Bioelectronics

GENERAL INFORMATION

The 30th International Workshop on Active-Matrix Flatpanel Displays and Devices (AM-FPD '23) will be held as an online meeting from July 4 (Tuesday) to 7 (Friday), 2023. This international workshop was established in 1994 to present the latest research and development in Active-Matrix Liquid Crystal Display technologies and their applications. In addition to AMLCDs and AMOLEDs, the scope has been widened to novel flat panel displays, materials for displays, flexible technologies, related physical phenomena and novel thin-film devices such as thin-film transistors (TFT), photovoltaics (PV) technologies, and other thin-film materials and devices (TFMD).

We hope that you will attend and enjoy our workshop.

WORKSHOP THEME

AM-FPD '23 will prepare an attractive program focusing on *“Create from SDGs and Metaverse”*.

SYMPOSIA

In addition to the regular sessions, we will prepare symposia which numerous speakers discuss for attractive and interesting themes.

Special Symposium on Vehicular Displays will focus on exciting developments paving the future of invehicle displays. The automotive industry is currently experiencing profound changes in its business environment, which will also have a strong impact on design and requirements of the human-vehicular interface, specifically displays.

Symposia, *“XR Technologies”*, *“Advances in TFT technology for Stretchable/Flexible Devices”*, *“Emerging Trends in R&D on Durability, Circularity and Sustainability of PVs”* and *“Development of Emerging and Neuromorphic Devices”* are scheduled. Invited speakers will talk about the latest topics from the viewpoints of functional materials, device structures, fabrication processes, driving schemes, circuit technologies, etc.

PRESENTATION TIMES FOR SPEAKERS

	Total	Presentation	Discussion
Keynote	45 min.	40 min.	5 min.
Special Symposium	40 min.	35 min.	5 min.
Invited	25 min.	20 min.	5 min.
Symposium	30 min.	25 min.	5 min.
Oral	20 min.	15 min.	5 min.
Late News	15 min.	12 min.	3 min.
Poster	16:40-18:10, July 6		

THE PROCEEDINGS OF AM-FPD '23

The Proceedings of AM-FPD '23 will be distributed in our workshop special website from July 4.

LANGUAGE

The official language of the workshop is English.

REGISTRATION

For Registration, access our online registration page (<http://www.amfpd.jp>) and enroll your information and complete payment. Registration fee is discounted until June 9 (JST). Registration and other fees should be paid in Japanese yen via credit cards. VISA, Master, AMEX are acceptable. Apple Pay and Google Play are also acceptable. The receipt can be downloaded after your payment has been completed.

Category	Advance Registration Fee until June 9, 2023 (JST)	Registration Fee	[One day] Special Symposium Only* ²
WORKSHOP*¹			¥35,000
Member* ³	¥50,000	¥55,000	
Non-Member	¥52,000	¥57,000	
Student	¥20,000	¥22,000	
Senior* ⁴	¥25,000		
TUTORIAL			
Regular	Tutorial Only	¥7,000	
	Conference Attendee	¥5,000	
Student		Free	

*¹The registration fee of the workshop includes the admission to all sessions and the proceedings.

*²One day pass of “Special Symposium Only” is available to attend Special Symposium on Wednesday, July 5. The proceedings of the AMFPD ‘23 is included in the fee.

*³The member of the societies which sponsor and support AM-FPD ‘23.

*⁴The category of senior is for attendees who are 65 years old or older

BANQUET

The banquet will be held on July 5, from 17:30 to 19:30 at Mariage Grande “Ambrosia” on the 8th floor of Avanti.

VISAS

Every foreign visitor entering Japan must have a valid passport. Visitors from countries whose citizens must have visas should apply to a Japanese consular office or diplomatic mission in their own country.

RECORDED PRESENTAION

Participants will watch the recorded video of oral presentation from July 20 (Thu.) to August 18 (Fri.)

CANCELLATION POLICY

In case of cancellation after payment, please contact to the secretariat (secretariat@amfpd.jp).

Cancel Charge

Before June 9-----Cancel fee 6%

After June 10-----100% of the registration fee / NO REFUND

The Proceedings of the AM-FPD ‘23 (download password) and on-demand viewing will be available.

Endorsement Letter

The endorsement letters to IEEE Journal Electron Device Society (J-EDS) or ECS Journal Solid State Science and Technology (JSS) will be issued for excellent papers, which are chosen at our internal rating processes by AMFPD program committees.

Please select which journal you wish getting the endorsement letter when you submit a paper to AM-FPD.

1. Endorsement letters will be issued to excellent papers from the AM-FPD committee after AM-FPD '23 workshop is held.
2. After you receive the endorsement letter,
 - Please attach your paper of AM-FPD '23 and the endorsement letter when submitting your manuscript to each journal,
 - You make sure to add in your reference list when you reuse the contents (figures / tables) used in your paper of AM-FPD '23.

Your ID and password are required to be registered before submitting your manuscript to each journal.

IEEE XPLORE DIGITAL LIBRARY

The Proceedings of AM-FPD '23 will be published in the IEEE Xplore digital library in around 2 months after the workshop.

TUTORIAL

These classes are widely aimed at many people from beginners to researchers who hope to review their knowledge. Presentations and documents will be in Japanese. Documents will be distributed to the participants who have registered in advance. These classes are available for an additional fee (see page 2).

Tuesday, July 4 (9 : 30 ~ 12 : 30)

Chairpersons :

- | | |
|-------------|---|
| 9:30 (T-1) | Technology trend of Si based TFT -From a viewpoint of a comparison with LSI devices-
N. Matsuo, <i>Univ. of Hyogo, Japan</i> |
| 10:30 (T-2) | Fabrication Processes and Characterization Methods for Thin-Film Solar Cells: from Principles and Fundamentals to Applications
H. Shirai, <i>Saitama Univ, Japan</i> |
| 11:30 (T-3) | Research Trends of Organic Transistors - Focusing on Materials and Fabrication Processes
H. Minemawari, <i>AIST, Japan</i> |

AWARDS

Papers presented at this workshop will be considered for “AM-FPD Paper Awards”, “AMFPD-ECS Japan Section Young Researcher Award”. These winners will be presented at the award ceremony in AM-FPD '24 workshop.

AM-FPD Paper Awards

“Best Paper Award”, “Poster Award” and “Student Paper Award” will be presented. The winners of them are selected by AMFPD '23 award committee chaired by Professor Yukiharu Uraoka (NAIST).

AMFPD-ECS Japan Section Young Researcher Award

ECS Japan Section and AM-FPD Organizing Committee have jointly established “AMFPD-ECS Japan Section Young Researcher Award”. This award will be given to the author under the age of 35 that belongs to the university or the research institute in Japan.

AM-FPD '22 PAPER AWARD

Best Paper Award

(2_3) **Crosstalk and Uniformity Analysis of Fingerprint-On-Display Technology Using Pinhole Imaging Technique**

Muhamad Affiq Bin Misran and Reiji Hattori
Kyushu University, Japan

Poster Paper Award

(P_8) **Interplay of Viscosities in Controlling The Orientation of Conjugated Polymer Thin Films Fabricated by Floating Film Transfer Method**

Shubham Sharma¹, Ajendra K. Vats², Daisuke Matsuo², Shuichi Nagamatsu¹,
Shyam S. Pandey¹
¹Kyushu Inst. of Technol., Japan, ²NAIST, Japan

Student Paper Award

Umu Hanifah, NAIST, Japan

(L_2) **Electrical Performance Improvement of All-Solution Processed Indium Zinc Oxide Thin Film Transistor by UV-Irradiation Treatment**

AMFPD-ECS Japan Section Young Researcher Award

Shuhei Tanaka, NHK Sci. & Technol. Research Lab., Japan

(L_1) **Direct patterning process development for solution-processed electrodes of TFTs**

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Chair: Hiroki Hamada (*Kindai Univ.*)
Vice-Chair: Hiroshi Tsutsu (*PVTEC*)
Junya Kiyota (*ULVAC*)
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Nobuo Sasaki (*Sasaki Consulting*)
Advisor: Makoto Ohkura
Akira Okada

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Taishi Takenobu (*Nagoya Univ.*)
Masaya Tamaki (*KYOCERA Corp.*)
Atsushi Wakamiya (*Kyoto Univ.*)
Yung-Hui Yeh (*ITRI*)

PROGRAM

Date: Tuesday, July 4

Opening Session (13:30~13:45)

Chairperson: H. Tanabe, *Iwate University, JAPAN*

Welcome Address

H. Hamada, *Kindai University, JAPAN*

Award Presentation

Keynote Address (13:45~16:00)

Chairpersons: H. Hamada, *Kindai University, JAPAN*

13:45-14:30 K_1 TFT Application Requirements and Possible Limits (INVITED)

Y. Kuo^{1,*})

¹⁾ *Texas A&M University, USA*

14:30-15:15 K_2 Environmentally and Financially Sound Recycling of Silicon Solar Panels (INVITED)

M. Tao^{1,*})

¹⁾ *Arizona State University, USA*

15:15-16:00 K_3 Patterned-Liquid-Crystal Planar Optics for Wavefront Control (INVITED)

M. Ozaki^{1,*})

¹⁾ *Osaka University, JAPAN*

— *Coffee Break* —

**Symposium 1 : Emerging Trends in R&D on Durability,
Circularity and Sustainability of PVs** (16:20~18:20)

Chairpersons: A. Wakamiya, *Kyoto University, JAPAN*

H. Ohkita, *Kyoto University, JAPAN*

16:20-16:50 S1_1 Recent Global Trends in PV Module Recycling (INVITED)

K. Komoto^{1,*})

¹⁾ *Mizuho Research & Technologies, Ltd., JAPAN*

16:50-17:20 S1_2 Perspective of Ideal Photovoltaic Modules for Various Applications (INVITED)

A. Masuda^{1,*})

¹⁾ *Niigata University, JAPAN*

17:20-17:50 S1_3 Degradation Mechanism of Tin-based Perovskite Solar Cells Investigated by Operando Electron Spin Resonance (LP-VASP) (INVITED)

K. Marumoto^{1,*})

¹⁾ *University of Tsukuba, JAPAN*

17:50-18:20 S1_4 High Stable Perovskite Solar Cells using Ionic-liquid Addition and Cesium Halides Intercalation Technology (INVITED)

Md. Shahiduzzaman^{1,*})

¹⁾ *Kanazawa University, JAPAN*

Date: Wednesday, July 5

The 30th Anniversary Special Symposium :

Future Automotive Cockpit Display and Technology Trends (9:15~17:05)

Greeting (9:15~9:25)

Chairperson: Dr.-Ing. Bernhard Straub, *Automotive Display Technology, Germany*

**Special Symposium 1 : Vehicle Wireless Communication
and Sensing Application** (9:25~10:45)

Chairpersons: H. Okada, *University of Toyama, JAPAN*
M. Kimura, *Ryukoku University, JAPAN*

**09:25-10:05 SS1_1 Characterization of Liquid Crystal Materials for Millimeter-Wave
Wireless Communication (INVITED)**

T. Nose^{1,*}, R. Ito¹⁾ and M. Honma¹⁾

¹⁾ *Akita Prefectural University, JAPAN*

**10:05-10:45 SS1_2 Object Detection in Poor-visibility Scenarios Using a Night-vision System
(INVITED)**

Y. Hayashi^{1,*}, K. Taguchi¹⁾, S. Morita¹⁾, K. Arata¹⁾ and H. Fujiyoshi²⁾

¹⁾ *Kyocera Corporation, JAPAN*, ²⁾ *Chubu University, JAPAN*

— *Coffee Break* —

Special Symposium 2 : Various Automotive Displays and Systems
(11:05~13:05)

Chairpersons: M. Kimura, *Ryukoku University, JAPAN*
H. Okada, *University of Toyama, JAPAN*

11:05-11:45 SS2_1 Augmented Reality HUDs: Challenges, Solutions and Competitors (INVITED)

K. Blankenbach^{1,*}

¹⁾ *Pforzheim University, GERMANY*

11:45-12:25 SS2_2 Competition of OLED and LCD for Automotive Applications (INVITED)

B. Straub^{1,*}

¹⁾ *Steinbeis Consulting Center, GERMANY*

— *Lunch* —

**Special Symposium 3 : Technological Trends
and Special Automotive LCDs** (14:35~15:55)

Chairpersons: T. Kamiya, *Tokyo Institute of Technology, JAPAN*
T. Mori, *Aichi Institute of Technology, JAPAN*

- 13:55-14:35 SS3_1 Automotive Display Design and Technology Trends: In the Future Software-Defined Car Era, Where Will the Display Go? (Tentative) (INVITED)**
S. Wu^{1,*}
¹⁾ *Omdia Research., TAIWAN*
- 14:35-15:15 SS3_2 Research for the Full Array Local Dimming (FALD) LCD for Automotive Applications (INVITED)**
T. Miyayama^{1,*}, T. Morita¹⁾ and W. Hsu²⁾
¹⁾ *AUO Corporation Japan, JAPAN*, ²⁾ *AUO Corporation, TAIWAN*

— *Coffee Break* —

Special Symposium 4 : LC materials for Automotive Applications

(16:15~16:55)

Chairpersons: T. Mori, *Aichi Institute of Technology, JAPAN*
T. Kamiya, *Tokyo Institute of Technology, JAPAN*

- 15:35-16:15 SS4_1 High Value-added Liquid Crystal Materials for Automotive Applications (Tentative) (INVITED)**
J. Hsia^{1,*}
¹⁾ *Merck, TAIWAN*
- 16:15-16:55 SS4_2 Displays In the Smart Automotive Future - Perceptions, Reflections and Projections (Tentative) (INVITED)**
D. Hermann^{1,*}
¹⁾ *Volvo, SWEDEN*

Closing (16:55~17:05)

Chairperson: H. Okada, *Toyama University, Japan*

Banquet (17:30~19:30)

Date: Thursday, July 6

Session 1 : The Frontiers of PV Technology (9:15~10:30)

Chairpersons: T. Nishimura, *Tokyo Institute of Technology, JAPAN*
Raifuku, *Aoyama Gakuin University, JAPAN*

- 09:15-09:40 1_1 Current Status of Earth-abundant Cu₂SnS₃-based Materials for Next-generation Solar Cells (INVITED)**
A. Kanai^{1,*}, T. Tosuke², M. Sugiyama², H. Araki³ and K. Tanaka¹
¹⁾ Nagaoka University of Technology, JAPAN, ²⁾ Tokyo University of Science, JAPAN, ³⁾ National Institute of Technology, Nagaoka College, JAPAN
- 09:40-10:05 1_2 Role of Additive in Perovskite Solar Cells (INVITED)**
P. Chen¹, K. -W. Huang¹, Y. -Y Chiu¹, C. -F. Lin¹, R. Rajendran¹, P. -Y Lin¹, H. -H. Chen¹ and M. -H. Li^{2,*}
¹⁾ National Cheng Kung University., TAIWAN, ²⁾ National Chi Nan University., TAIWAN
- 10:05-10:30 1_3 Development of Perovskite Solar Cells towards High Efficiency, Stability, and Modularization (INVITED)**
H. Kanda^{1,*}, K. Yamamoto¹, N. Nishimura¹, A. Kogo¹ and T. Murakami¹
¹⁾ National Institute of Advanced Industrial Science and Technology, JAPAN

— Coffee Break —

Symposium 2 : XR Technologies (10:50~12:20)

Chairpersons: M. Tamaki, *KYOCERA Corporation, JAPAN*
B. Straub, *Steinbeis Consulting Center, GERMANY*

- 10:50-11:20 S2_1 Unleashing Human Vision by Head Mounted Displays (INVITED)**
K. Kiyokawa¹
¹⁾ Nara Institute of Science and Technology, JAPAN
- 11:20-11:50 S2_2 Sunglasses Like Head-Mounted Displays with Polarized Laser Backlight and Holographic Optics (INVITED)**
Y. Takahashi^{1,*}, K. Okuda¹, H. Kijima¹, J. Hirosawa¹ and S. Komura¹
¹⁾ Japan Display Inc., JAPAN
- 11:50-12:20 S2_3 MicroLED Technology and Applications by PixeLED Solutions**
Y. -T. Liu¹ and Y. -L. Li^{*}
¹⁾ PlayNitride Inc., TAIWAN

— Lunch —

**Symposium 3 : Development of Energy Harvesting
and Sensing Devices** (13:35~15:05)

Chairpersons: H. Kajii, *Osaka University, JAPAN*
S. Pandey, *Kyushu Institute of Technology, JAPAN*

- 13:35-14:05 S3_1 Thermoelectric Cloths Using Carbon Nanotube Yarns with Molecular Junctions (INVITED)**
M. Nakamura^{1,*}
¹⁾ Nara Institute of Science and Technology, JAPAN

- 14:05-14:35 S3_2 Thermoelectric Properties of Halide Perovskite Thin Films (INVITED)**
 K. Watanabe¹⁾, A. Miura²⁾, T. Yabuki²⁾ and K. Miyazaki^{1,2,*}
¹⁾ Kyushu University, JAPAN, ²⁾ Kyushu Institute of Technology, JAPAN
- 14:35-15:05 S3_3 Strategies to Improve the Performance of Organic Photosensitive Transistors (INVITED)**
 N. Yadav¹⁾, V. Singh^{1,*}
¹⁾ Indian Institute of Technology Indore, INDIA

Session 2: Advanced Materials and Process for TFTs (15:05~16:35)

Chairpersons: H. Kumomi, *JST, JAPAN*
 M. Furuta, *Kochi University of Technology, JAPAN*

- 15:05-15:30 2_1 A Strategy for High-Mobility and Highly-Stable Oxide TFTs (Tentative) (INVITED)**
 J. Kim¹⁾
¹⁾ UNIST, KOREA
- 15:30-15:55 2_2 High-mobility polycrystalline In₂O₃:H thin-film transistors fabricated through low-temperature solid-phase crystallization (Tentative) (INVITED)**
 Y. Magari¹⁾
¹⁾ Hokkaido University, JAPAN
- 15:55-16:15 2_3 Novel Self-aligned Passivation Process for Oxide TFTs Utilizing Amorphous Gallium Oxide**
 Y. Shi¹⁾, J. Kim¹⁾ and H. Hosono¹⁾
¹⁾ Tokyo Institute of Technology, JAPAN
- 16:15-16:35 2_4 Hydrogen-Ion Implantation at 300°C Used to Passivate Charge-Trapping Defect States in Polycrystalline-Silicon Films**
 T. Sameshima^{1,*}, T. Nagao²⁾, Y. Inouchi²⁾, J. Tatemichi²⁾, M. Hasumi¹⁾ and T. Ueno¹⁾
¹⁾ Tokyo University of Agriculture and Technology, JAPAN ²⁾ Nissin Ion Equipment Co., Ltd., JAPAN

Poster Session (16:40~18:10)

FPDp

- P_1 Benzothiazole-based Bipolar Hosts for Realizing Highly Efficient OLEDs**
 J. -M. Wang¹⁾, T. -C. Lee¹⁾, C. -H. Chang^{1,*}, W. -Y. Chen²⁾, S. -Y. Wu²⁾, Y. -D. Lin²⁾ and C. -W. Lu²⁾
¹⁾ Yuan Ze University, TAIWAN, ²⁾ Providence University, TAIWAN
- P_2 Achieving over 20% EQE in RGB PhOLEDs with a Versatile Exciplex-Forming Co-host**
 Y. -C. Kung^{1,*}, P. -Y. Chiang¹⁾ and W. -Y. Hung¹⁾
¹⁾ National Taiwan Ocean University, TAIWAN
- P_3 Driving Circuit Shared by Two Vertical Dimming Zones for Mini-LED Backlight Units**
 C. -R. Lu^{1,*}, C. -H. Ke¹⁾, W. -S. Liao¹⁾, M. -Y. Deng²⁾ and C. -L. Lin¹⁾
¹⁾ National Cheng Kung University, TAIWAN, ²⁾ AU Optonics Corp., TAIWAN
- P_4 An Auto-zeroing In-pixel Voltage Comparator for High Accurate PWM Micro-LED Displays Based on LTPO TFTs**
 S. Que^{1,*}, Y. Liu¹⁾, C. Liao¹⁾, J. Fu¹⁾, Z. Song¹⁾ and S. Zhang¹⁾
¹⁾ Peking University, CHINA
- P_5 Withdrawn**

TFTp

- P_6 Argon-Precursor-Ion Implantation Used to Activate Boron Atoms in Polycrystalline-Silicon Films at Low Temperatures**
 T. Sameshima^{1,*}, T. Nagao²⁾, Y. Inouchi²⁾, J. Tatemichi²⁾, M. Hasumi¹⁾ and T. Ueno¹⁾
¹⁾ Tokyo University of Agriculture and Technology, JAPAN, ²⁾ Nissin Ion Equipment Co.Ltd, JAPAN
- P_7 High Subthreshold Swing a-IGZO Driving TFTs for Low-Gray Level Uniformity in Active-Matrix OLED**

S. An^{1,*}), C. Park¹), Y. Yun¹), J. -H. Park¹), T. -H. Moon²), J. Noh²), K. -S. Park²), Y. -S. Kim³) and S. -Y. Lee¹)

¹) Seoul National University, KOREA, ²) LG Display Co., Ltd., KOREA ³) Sungkyunkwan University, KOREA

P_8 Argon Implantation at 300°C Used to Dehydrogenate Hydrogenated Amorphous Silicon Films for Excimer-Laser-Induced Crystallization

T. Nagao^{1*)}, Y. Inouchi¹), J. Tatemichi¹), M. Hasumi²), T. Ueno²) and T. Sameshima²)

¹) Nissin Ion Equipment Co., Ltd., JAPAN, ²) Tokyo University of Agriculture and Technology, JAPAN

P_9 Investigation of Low-temperature Oxidation of Si Substrates Using Chemical Solutions

H. Takahashi¹), Y. Irie^{1,*}), G. Shimizu¹), Y. Iwazaki¹) and T. Ueno¹)

¹) Tokyo University of Agriculture and Technology, JAPAN

P_10 Insights of Nanosheet Channel Thickness on Reliability Degradation of Thin-Film Transistor

W. C. -Y. Ma^{1,*}), C. -J. Su²), K. -H. Kao³), T. -C. Cho⁴), J. -Q. Guo¹), C. -J. Wu¹), P. -Y. Wu¹) and J. -Y. Hung¹)

¹) National Sun Yat-sen University, TAIWAN, ²) National Yang Ming Chiao Tung University, TAIWAN,

³) National Cheng Kung University, TAIWAN, ⁴) Taiwan Semiconductor Research Institute, TAIWAN

P_11 Impacts of Asymmetry Double Gate Structure on Reliability Degradation of Thin-Film Transistor With Nanosheet Channel

W. C. -Y. Ma^{1,*}), C. -J. Su²), K. -H. Kao³), T. -C. Cho⁴), J. -Q. Guo¹), C. -J. Wu¹), P. -Y. Wu¹) and J. -Y. Hung¹)

¹) National Sun Yat-sen University, TAIWAN, ²) National Yang Ming Chiao Tung University, TAIWAN,

³) National Cheng Kung University, TAIWAN, ⁴) Taiwan Semiconductor Research Inst., TAIWAN

P_12 Influence of PBTTC-C₁₄ Crystallization on Photoresponse Characteristics of Organic Field-effect Transistor

P. -H. Fang¹), P. -A. Cho¹), J. Ruan¹), H. -L. Cheng¹) and W. -Y. Chou^{1,*})

¹) National Cheng Kung University, TAIWAN

P_13 Hybrid Photosensitive Field Effect Transistor Based on Conjugated Polythiophene and Perovskite Nanocrystal

G. -W. Hsieh^{1,*}), Y. -S. Zhou¹), H. -J. Cheng¹) and W. -S. Hu¹)

¹) National Yang Ming Chiao Tung University, TAIWAN

PVp

P_14 Potential of Nano-sheet Lateral pn-Junction Flexible Solar Panel

Y. Omura^{1,*})

¹) Kansai University, JAPAN

P_15 Efficient Defect Passivation of Novel Quinoxaline-based Hole Transporting Materials for Perovskite Solar Cells

Y. -S. Lin¹), N. -H. Chen¹) and Y. J. Chang^{1,*})

¹) Tunghai University, TAIWAN

P_16 Studies on RF Magnetron Sputtered FTO/n-ZnO/p-NiO/AgNW Transparent Solar Cells Devices

T. -C. Chen¹), G. Balaji¹), W. -S. Liu^{1,*}), K. -J. Hu¹), F. -W. Chiu¹) and J. -H. Lin¹)

¹) Yuan Ze University, TAIWAN

TFMDp

P_17 Study of Water Resistance of GeO₂ Films

T. Shibuya¹), H. Saito^{1,*}), Y. Iwazaki¹) and T. Ueno¹)

¹) Tokyo University of Agriculture and Technology, JAPAN

P_18 Tunnel Thin-Film Transistor Featuring Ferroelectric Gate Stack for Synaptic Applications

W. C. -Y. Ma^{1,*}), C. -J. Su²), K. -H. Kao³), T. -C. Cho⁴), J. -Q. Guo¹), C. -J. Wu¹), P. -Y. Wu¹) and J. -Y. Hung¹)

¹) National Sun Yat-sen University, TAIWAN, ²) National Yang Ming Chiao Tung University, TAIWAN,

³) National Cheng Kung University, TAIWAN, ⁴) Taiwan Semiconductor Research Inst., TAIWAN

P_19 Sn-Doped Si Thin-Films on Insulator by Solid-Phase Crystallization

Y. Hanafusa^{1,*}), K. Okamoto¹) and T. Sadoh¹)

¹) Kyushu University, JAPAN

P_20 Excimer Laser Doping for PN Junction Formation with Extremely Low Thermal Budget

R. Aoki^{1,*}), K. Katayama¹), D. Nakamura¹), H. Ikenoue¹) and T. Sadoh¹)

¹) Kyushu University, JAPAN

P_21 Improved Carrier Mobility of Sn-Doped Ge Thin-Films (≤20 nm) by Post-Annealing for Thin-Film Transistor Application

T. Koga^{1,*}, T. Nagano¹, K. Moto², K. Yamamoto¹ and T. Sadoh¹

¹) *Kyushu University, JAPAN*, ²) *JSPS Research Fellow, JAPAN*

P_22 Treatment Time Dependence of Graphene Oxide Reduction by Atomic Hydrogen Annealing

M. Hirata¹, A. Fujibuchi¹, K. Sumitomo¹ and A. Heya^{1,*}

¹) *University of Hyogo, JAPAN*

P_23 Bistable Resistive Switches fabricated by Unidirectional Floating Film Transfer Method

S. Sharma^{1,*}, N Kumari² and S. S. Pandey¹

¹) *Kyushu Institute of Technology, JAPAN*, ²) *Nara Advanced Institute of Science and Technology, JAPAN*

P_24 Fabrication and Characterization of Oriented P3HT/CdS Hybrid Thin Films Prepared by Friction Transfer for Organic Photovoltaics

Y. Kurokawa^{1,*}, S. Pradhan¹, T. Kato², S. Nagamatsu¹ and S. S. Pandey¹

¹) *Kyushu Institute of Technology, JAPAN*, ²) *National Institute of Technology, JAPAN*

P_25 Improved NiOx Surface Using Phosphonic Acid-based Self-assembled Monolayer Treatment toward Printed Light-emitting Diodes

S. Yamada^{1,*}, H. Kajii¹, M. Huang¹, A. Okamoto¹, H. Bai¹, S. Toda² and M. Kondow¹

¹) *Osaka University, JAPAN*, ²) *ULVAC-Osaka University, Joint Research Laboratory, JAPAN*

LNp

P_L1 Fabrication and Characterization of Inverted Organic Light-Emitting Diodes With Low Driving Voltage Utilizing Upconversion Process

M. Okuda^{1,*}, T. Kinoshita¹, T Kobayashi¹, H. Naito¹ and N. Takashi¹

¹) *Osaka Metropolitan University, JAPAN*

P_L2 Vertical p-Channel Poly-Ge TFT for CMOS Application on Glass Substrates

K. Kusunoki^{1,*}, K. Suzuki¹, S Suzuki¹ and A. Hara¹

¹) *Tohoku Gakuin University, JAPAN*

P_L3 CMOS Inverter with High-k 4-Terminal Poly-Si TFTs on Glass Substrates

K. Nomura^{1,*} and A Hara¹

¹) *Tohoku Gakuin University, JAPAN*

P_L4 Amorphous Ga-Al-O Thin Film Double-layer Memristor with Different Oxygen Density Fabricated by Mist CVD Method

R. Ito^{1,*}, S. Sugisaki¹, A. Dakeyama¹, T. Matsuda^{1,2}, H. Kawanishi¹ and M. Kimura¹

¹) *Ryukoku University, JAPAN*, ²) *Kindai University, JAPAN*

P_L5 Stability Improvement of Layered Indium Selenide Field-Effect Transistors

T. -P. Lu¹, M. -X. Loi¹, J. -J. Yeh¹, A. Subramanian¹, P. -H. Chiu¹, C. -H. Wu¹, H. -W. Liu¹, R. K. Ulaganathan² and C. -Y. Lin^{1,*},

¹) *Chung Yuan Christian University, TAIWAN*, ²) *Technical University of Denmark, DENMARK*

Date: Friday, July 7

**Symposium 4 : Advances in TFT technology
for Stretchable/Flexible Devices** (9:15~10:45)

Chairpersons: T. Nagase, *Osaka Metropolitan University, JAPAN*
N. Saito, *Kioxia Corporation, JAPAN*

09:15-09:45 S4_1 Advanced Organic Thin-film Electronics for Non-Invasive Medical Applications (INVITED)

T. Sekitani¹⁾

¹⁾ *Osaka University, JAPAN*

09:45-10:15 S4_2 Solution Processed Oxide Semiconductors for Flexible Active-Matrix Sensors (INVITED)

Y. Tang^{1,2)}, Y. Wang^{1,2)}, Y. Chen^{1,2)}, D. Li^{1,2)}, H. Ren^{1,2)}, F. Li^{1,2)}, G. Liu^{1,2)}, R. Jin^{1,2)} and B. Zhu^{2,3,*}

¹⁾ *Zhejiang University, CHINA*, ²⁾ *Westlake University, CHINA*, ³⁾ *Westlake Institute for Advanced Study, CHINA*

10:15-10:45 S4_3 Recent progress in Flexible and Stretchable Backplane Technologies for Future Deformable Display Applications (INVITED)

M. Miyakawa^{1,*}, H. Tsuji¹⁾, T. Takei¹⁾, T. Yamamoto²⁾, Y. Fujisaki¹⁾ and M. Nakata¹⁾

¹⁾ *NHK Science & Technology Research Laboratories, JAPAN*, ²⁾ *NHK Foundation, JAPAN*

— Break —

Session 3 : Neuromorphic and Emerging Devices (11:05~12:10)

Chairpersons: H. Naito, *Osaka Metropolitan University, JAPAN*
A. Heya, *University of Hyogo., JAPAN*

11:05-11:30 3_1 Halide Perovskite and Metal Halide Memristors and Artificial Synapses for Neuromorphic Computing (INVITED)

T. -K. Su¹⁾, W. -K. Cheng¹⁾, L. Yang¹⁾, Z. -M. Shi¹⁾, L. -W. Chen¹⁾, W. -C. Wang¹⁾ and H. -W. Lin^{1,*}

¹⁾ *National Tsing Hua University, TAIWAN*

11:30-11:50 3_2 Application of Bayes Optimization and Machine-learning Regressions to Seek Fabrication Condition of a-In-Ga-Zn-O for Gas Sensor Applications

A. Shimizu¹⁾, K. Ide¹⁾, T. Katase¹⁾, H. Hiramatsu¹⁾, H. Hosono¹⁾ and T. Kamiya¹⁾

¹⁾ *Tokyo Institute of Technology, JAPAN*

11:50-12:10 3_3 Sensitivity-Adjustable, Negatively Strain-Resistive Switch-Type Conductive Fibers for Textile-Based Stretchable Displays with Hidden-Pixel Structures

W. K. Min^{1,*}, C. Won¹⁾, D. H. Kim¹⁾, S. Lee¹⁾, J. Chung¹⁾, S. Cho¹⁾, T. Lee¹⁾ and H. J. Kim¹⁾

¹⁾ *Yonsei University, KOREA*

— Lunch —

Session 4 : OLED Technologies (13:40~14:40)

Chairpersons: C. -L. Lin, *National Cheng Kung University, TAIWAN*
Y. -H. Yeh, *ITRI, TAIWAN*

- 13:40-14:00 4_1 Effect of Inserting 10 nm-thick mCP Layer on EL Properties for Typical TADF OLEDs**
T. Mori^{1,*}, R. Sato¹⁾, Y. Ichino¹⁾ and Y. Seike¹⁾
¹⁾ *Aichi Institute of Technology, JAPAN*
- 14:00-14:20 4_2 A Study on the Large Size AMOLED Display Backplane less Mask Process**
I. Y. Chung^{1,2,*}, G. Jin²⁾ and H. Yoon¹⁾
¹⁾ *Seoul National University of Science and Technology, KOREA*, ²⁾ *Samsung Display Co., Ltd., KOREA*
- 14:20-14:40 4_3 AMOLED Pixel Circuit Using P-type LTPS TFTs Suitable for Low Refresh Rate Wearable Devices**
C. -T. Chiu^{1,*}, Y. -C. Chen¹⁾, P. -C. Lai²⁾ and C.-L. Lin¹⁾
¹⁾ *National Cheng Kung University, TAIWAN*, ²⁾ *AU Optonics Corporation, TAIWAN*

— *Coffee Break* —

Session 5 : Driving Circuits (15:00~16:25)

Chairpersons: R. Hattori, *Kyushu University, JAPAN*
K. Omoto, *Apple Inc., JAPAN*

- 15:00-15:25 5_1 Thin-Film-Transistor Pixel Circuit Array on Glass for AMOLED and Micro-LED Displays (INVITED)**
C. -L. Lin^{1,*}, C. -Y. Huang¹⁾, Y. -J. Chen¹⁾, Y. -C. Chen¹⁾, S. -C. Chen¹⁾ and P. -C. Lai²⁾
¹⁾ *National Cheng Kung University, TAIWAN*, ²⁾ *AU Optonics Corporation, TAIWAN*
- 15:25-15:45 5_2 A New LTPS TFT-based 8T1C AMOLED Pixel Circuit for Low Refresh-rate Driving**
K. C. Moon^{1,*}, J. -H. Lee²⁾ and M. Park²⁾
¹⁾ *Gachon University, KOREA*, ²⁾ *Samsung Display, KOREA*
- 15:45-16:05 5_3 Multiple-Threshold-Voltage-Compensation Driving Scheme Using the Dimming Period To Stabilize the OLED Luminance at Low Gray Levels**
J. -H. Lee^{1,*}, K. -S. Kang¹⁾, J. -H. Park¹⁾, C. Park¹⁾ and S. -Y. Lee¹⁾
¹⁾ *Seoul National University, KOREA*
- 16:05-16:25 5_4 An LTPS-based Mini-LED Backlight Driving Circuit with Threshold Voltage Variations and VSS I-R Rise Compensation**
Y. -C. Chen^{1,*}, W. -S. Liao¹⁾, M. -Y. Deng²⁾ and C. -L. Lin¹⁾
¹⁾ *National Cheng Kung University, TAIWAN*, ²⁾ *AU Optonics Corp., TAIWAN*

LATE NEWS (16:25~16:55)

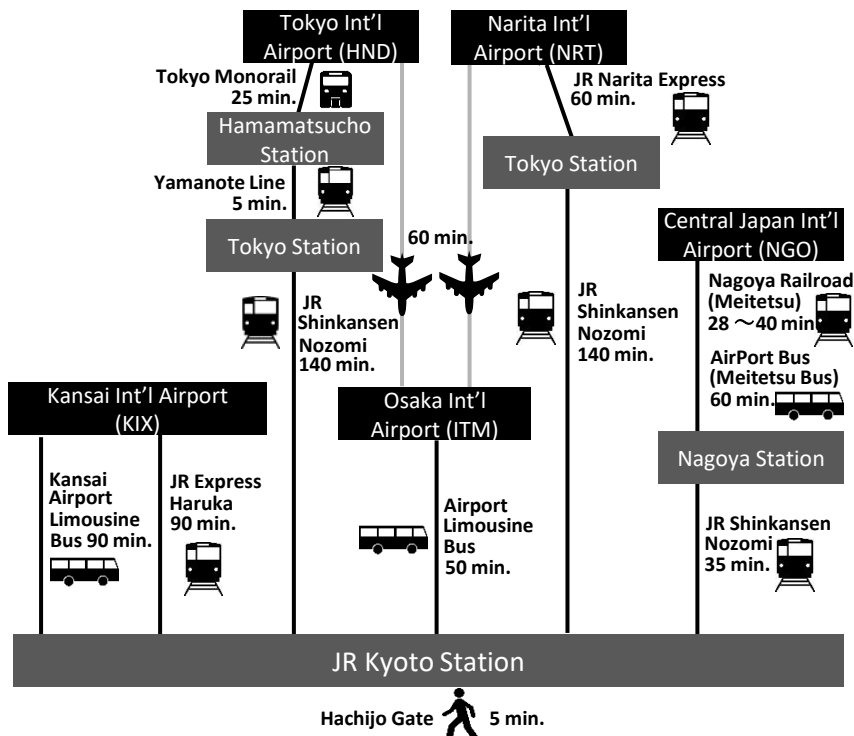
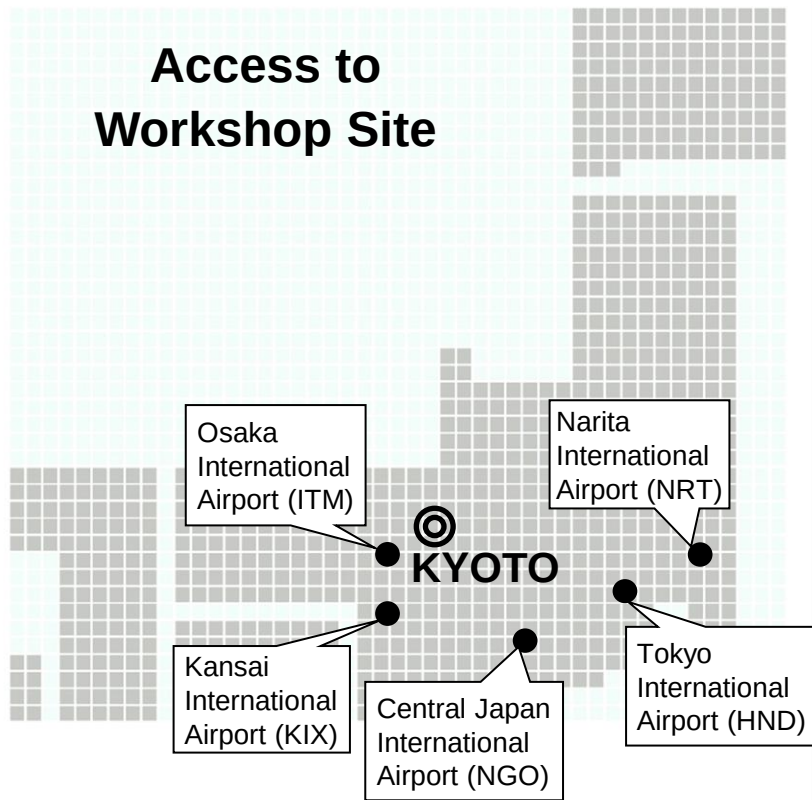
Chairpersons: T. Nagase, *Osaka Metropolitan University, JAPAN*
H. Kajii, *Osaka University, JAPAN*

- 16:25-16:40 L_1 Optoelectronic Characteristics of Gallium Oxide Deep Ultraviolet Photodetectors with Symmetric and Asymmetric Metal Contacts**
C. -Y. Tsay^{1,*}, H. -M. Tsai¹⁾, P. Sittimart²⁾, M. V. Sreenath²⁾, T. Kusaba²⁾ and T. Yoshitake²⁾
¹⁾ *Feng Chia University, TAIWAN*, ²⁾ *Kyushu University, JAPAN*
- 16:40-16:55 L_2 Novel Thin-Film Neuromorphic Devices Integrating Memristors and Capacitors**
K. Yachida^{1,*}, Y. Abe¹⁾, K. Sawai¹⁾, T. Matsuda²⁾, H. Kawanishi^{1,3)} and M. Kimura^{1,3)}
¹⁾ *Ryukoku University, JAPAN*, ²⁾ *Kindai University, JAPAN*, ³⁾ *Nara Institute of Science and Technology, JAPAN*

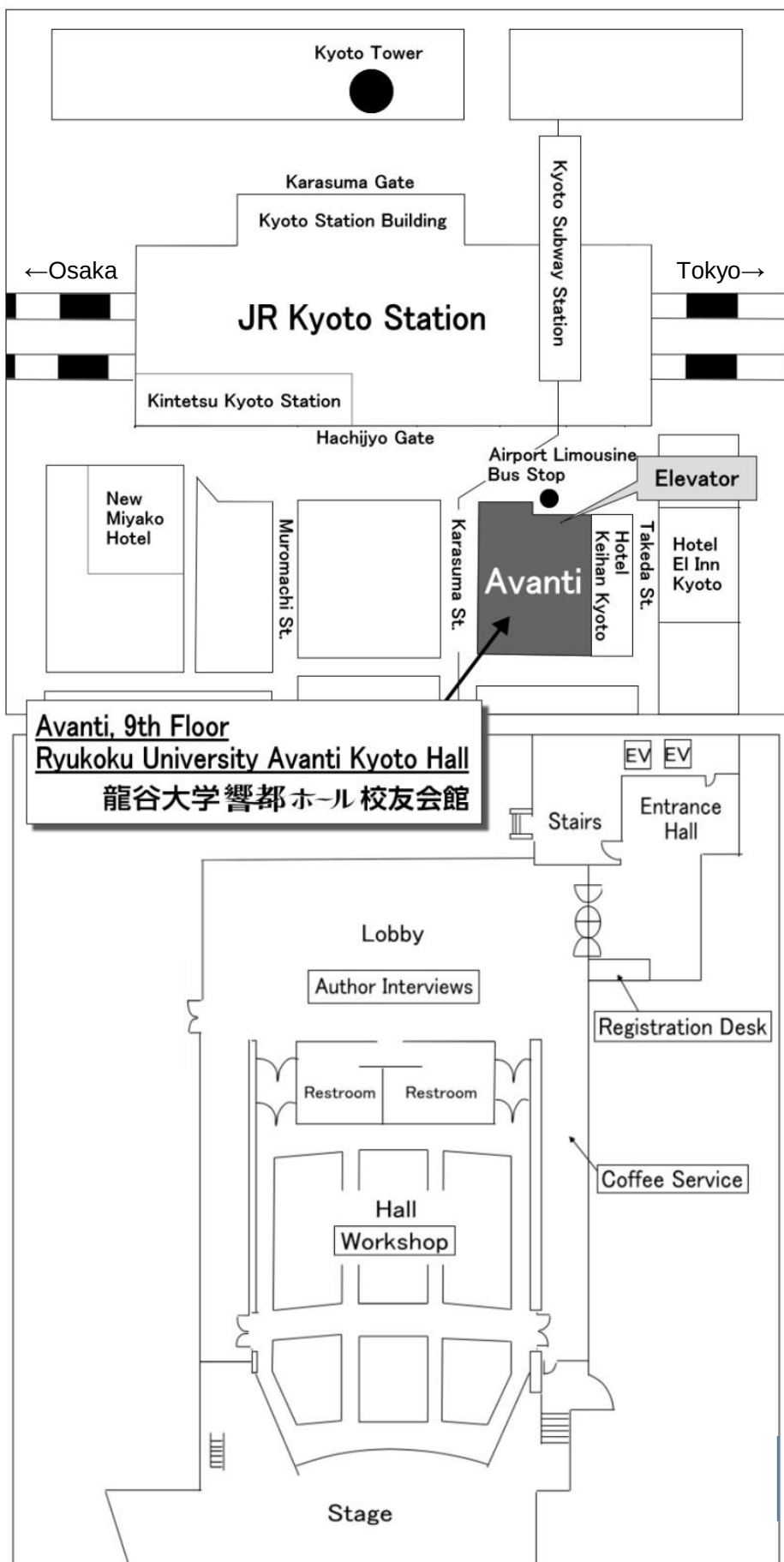
Closing Remarks (16:55~17:00)

Chairpersons: Y. Uraoka, *Nara Institute of Science and Technology, JAPAN*

Access to Workshop Site



Ryukoku University Avanti Kyoto Hall (Avanti 9th Floor)
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**THE TWENTY-NINTH INTERNATIONAL WORKSHOP ON
ACTIVE-MATRIX FLATPANEL DISPLAYS AND DEVICES
—TFT TECHNOLOGIES AND FPD MATERIALS —
(AM-FPD ‘23)**

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