

# PROGRAM

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# AM-FPD 22

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

-TFT TECHNOLOGIES AND FPD MATERIALS-

July 5 - 8, 2022

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

# GENERAL INFORMATION

The 29th International Workshop on Active-Matrix Flatpanel Displays and Devices (AM-FPD '22) will be held as an online meeting from July 5 (Tuesday) to 8 (Friday), 2022. 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 '22 will prepare an attractive program focusing on “*Prepare for Evolutional Progress after the Pandemic!*”.

## **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, “*Micro-LED Technologies*”, “*Recent Advances in TFT Technologies for Future Electronics*” , “*Halide Perovskite Solar Cells: Towards a Higher Horizon of Evolution*” 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	15:30-17:00, July 7		

## **THE PROCEEDINGS OF AM-FPD '22**

The Proceedings of AM-FPD '22 will be distributed in our workshop special website from July 5.

## **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 10 (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 10, 2022 (JST)	Registration Fee	[One day] Special Symposium Only* <sup>2</sup>
<b>WORKSHOP*<sup>1</sup></b>			
Member* <sup>3</sup>	¥50,000	¥55,000	¥35,000
Non-Member	¥52,000	¥57,000	
Student	¥20,000	¥22,000	
Senior* <sup>4</sup>	¥25,000		
<b>TUTORIAL</b>			
Regular	Tutorial Only	¥7,000	
	Conference Attendee	¥5,000	
Student		Free	

\*<sup>1</sup>The registration fee of the workshop includes the admission to all sessions and the proceedings.

\*<sup>2</sup>One day pass of “Special Symposium Only” is available to attend Special Symposium on Wednesday, July 6. The proceedings of the AMFPD '22 is included in the fee.

\*<sup>3</sup>The member of the societies which sponsor and support AM-FPD '22.

\*<sup>4</sup>The category of senior is for attendees who are 65 years old or older

## **ON-DEMAND VIEWING**

The video recordings of oral presentation will be available to watch online from July 19 (Tue.) to August 18(Thu.)

## **CANCELLATION POLICY**

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

### Cancel Charge

Before June 10-----Cancel fee 5%

After June 11-----100% of the registration fee / NO REFUND

The Proceedings of the AM-FPD '22 (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 '22 workshop is held.
2. After you receive the endorsement letter,
  - Please attach your paper of AM-FPD '22 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 '22.

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 '22 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 5 (9 : 30 ~ 11 : 30)**

- |             |   |
|-------------|---|
| 9:30 (T-1)  | Working Principle and Evaluation Methods of Crystalline Silicon Solar Cells<br>Keisuke Ohdaira, <i>JAIST, Japan</i>                               |
| 10:30 (T-2) | History and the Subjects of LTPS Technology for the Future (A Message to Young Scientists)<br>Takashi Noguchi, <i>Univ. of the Ryukyus, 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 '23 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 '22 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 '21 PAPER AWARD

### **Best Paper Award**

(2\_3) **Peeling Technique by Two-Dimensional MoSe<sub>2</sub> Atomic Layer for Bifacial-Flexible Cu (In,Ga) Se<sub>2</sub> Solar Cells**

Takahito Nishimura, Abdurashid Mavlonov, Jakapan Chantana  
*Ritsumeikan Univ., Japan*

### **Poster Paper Award**

(P\_02) **Characteristics of argon-ion-implanted amorphous-InGaZnO**

Keisuke Yasuta<sup>1</sup>, Toshimasa Ui<sup>1</sup>, Takuya Ikeda<sup>2</sup>, Daisuke Matsuo<sup>2</sup>,  
Toshihiko Sakai<sup>2</sup>, Shojiro Dohi<sup>1</sup>, Yoshitaka Setoguchi<sup>2</sup>, Eiji Takahashi<sup>2</sup>,  
Yasunori Andoh<sup>2</sup>, Junichi Tatemichi

<sup>1</sup>*Nisshin Ion Equipment Co., Ltd., Japan*, <sup>2</sup>*Nisshin Electric Co., Ltd., Japan*

### **Student Paper Award**

**Htet Su Wai, *Kochi Univ. of Technol., Japan***

(4\_3) **Oxygen Ratio Effect on Zinc Oxide Films Fabricated by Radio Frequency Magnetron Sputterin for Photoluminescence Type Gas Sensor Application**

### **AMFPD-ECS Japan Section Young Researcher Award**

**Juan Paolo Bermundo, *Nara Inst. of Sci. and Technol., Japan***

(5\_2) **High-k Solution Processed Hybrid Gate Insulators for Amorphous Oxide Thin-Film Transisters and its Temperature and Thickness Dependence**

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

# PROGRAM

Date: Tuesday, July 5

**Opening Session** (12:30~12:45)

**Keynote Address** (12:45~15:00)

- 12:45-13:30 K\_1 Organic and Inorganic Materials R&D for High Voltage Perovskite Photovoltaic Devices (INVITED)**  
T. Miyasaka<sup>1,\*</sup>  
<sup>1)</sup> *Toin University of Yokohama, JAPAN*
- 13:30-14:15 K\_2 Molecular Engineering of Organic Photovoltaics (INVITED)**  
H. Imahori<sup>1,\*</sup>  
<sup>1)</sup> *Kyoto University, JAPAN*
- 14:15-15:00 K\_3 TFT Interfaces for High Sensory Resolution at Ultralow Power (INVITED)**  
A. Nathan<sup>1,2\*</sup>, J. Yu<sup>2</sup>, C. Jiang<sup>3</sup> and H. Ma<sup>4</sup>  
<sup>1)</sup> *University of Cambridge, UK* <sup>2)</sup> *Shandong University, CHINA* <sup>3)</sup> *Tsinghua University, CHINA* <sup>4)</sup> *Chinese Academy of Science, CHINA*

— Coffee Break —

**Symposium 1 : Halide Perovskite Solar Cells:  
Towards a Higher Horizon of Evolution** (15:20~17:20)

- 15:20-15:50 S1\_1 Highly Stable Carbon-Based Multi-Porous-Layered-Electrode Perovskite Solar Cells (INVITED)**  
S. Ito<sup>1,\*</sup>, Y. Sakai<sup>1</sup>, R. Tsuji<sup>1</sup>, T. Shioki<sup>1</sup> and K. Ohishi<sup>1</sup>  
<sup>1)</sup> *University of Hyogo, JAPAN*
- 15:50-16:20 S1\_2 Materials to Improve the Performance of Sn-Based Perovskite Solar Cells (INVITED)**  
A. Wakamiya<sup>1,\*</sup>, S. Hu<sup>1</sup>, T. Nakamura<sup>1</sup>, T. Handa<sup>1</sup>, T. Yamada<sup>1</sup>, M. Truong<sup>1</sup>, R. Murdey<sup>1</sup>, Y. Kanemitsu<sup>1</sup>  
<sup>1)</sup> *Kyoto University, JAPAN*
- 16:20-16:50 S1\_3 Characteristics of Halide Perovskites via Low-pressure Vapor-assisted Solution Process (LP-VASP) (INVITED)**  
H. Yeh<sup>1</sup>, Y. Chen<sup>1</sup>, W. Hung<sup>1</sup>, M. Li<sup>1</sup> and P. Chen<sup>1,\*</sup>  
<sup>1)</sup> *National Cheng Kung University, TAIWAN*
- 16:50-17:20 S1\_4 Photo-Induced Charge Carrier Dynamics of Metal Halide Perovskite (INVITED)**  
Y. Tachibana<sup>1,\*</sup>  
<sup>1)</sup> *RMIT University, AUSTRALIA*

**Symposium 2 : Micro-LED Technologies** (17:20~19:00)

- 17:20-17:50 S2\_1 Micro LED sensor eye-tracking for augmented reality glasses with embedded micro display (INVITED)**  
C. Luo<sup>1</sup>, K. Liang<sup>1</sup>, C. Chu<sup>1</sup>, C. Lin<sup>1,2</sup>, C. Chao<sup>1</sup>, W. Kuo<sup>1</sup> and Y. Fang<sup>1,\*</sup>  
<sup>1)</sup> *Industrial Technology Research Institute (ITRI), TAIWAN* <sup>2)</sup> *National Taiwan University, TAIWAN*



- 17:50-18:20 S2\_2 Eu-doped GaN red LEDs for micro-LED displays with extremely high resolution (INVITED)**  
Y. Fujiwara<sup>1,\*</sup>, S Ichikawa<sup>1</sup>, D. Timmerman<sup>1</sup>, and J. Tatebayashi<sup>1</sup>  
<sup>1</sup>) *Osaka University, JAPAN*
- 18:20-18:40 S2\_3 Cylindrical Aerial LED Display**  
R. Hattori<sup>1,\*</sup>  
<sup>1</sup>) *Kyushu University, JAPAN*
- 18:40-19:00 S2\_4 A Novel Mini-LED Backlit Driving Circuit Using PWM Mechanism with  $V_{TH}$  and  $V_{SS}$  I-R Rise Compensation**  
C. Ke<sup>1,\*</sup>, Y. Lin<sup>2</sup> and C. Lin<sup>1</sup>  
<sup>1</sup>) *National Cheng Kung University, TAIWAN*

Date: Wednesday, July 6

**Greeting** (9:15~9:25)

**Special Symposium 1 : Variety of automotive technology  
and automotive for future** (9:25~11:25)

- 09:25-10:05 **SS1\_1 Liquid crystal beam steering angle expander for LiDAR applications (INVITED)**  
Y. Li<sup>1,\*</sup>, Z. Luo<sup>1</sup> and S. Wu<sup>1</sup>  
<sup>1</sup> *University of Central Florida, U.S.A.*
- 10:05-10:45 **SS1\_2 High Performance Active-Matrix Light-Emitting Displays Enabled by Vertical Light-Emitting Transistor Technology (INVITED)**  
X. Chen<sup>1</sup>, H. Katsui<sup>2</sup>, K. Miyachi<sup>2</sup>, W. Youn<sup>1</sup>, I.S. Cho<sup>1</sup>, C. Samouce<sup>1</sup>, D. Cheney<sup>1</sup>, R. Jayaraman<sup>1</sup>, A. Titov<sup>1</sup>, R. Das<sup>1</sup>, A. Schachtner<sup>1</sup>, J. Alvarez<sup>3</sup>, S. Vasilyeva<sup>1</sup>, A. Rinzler<sup>1,3</sup>, M. Lemaitre<sup>1</sup> and B. Liu<sup>1,\*</sup>  
<sup>1</sup> *Matrix Technologies, USA* <sup>2</sup> *JSR Corporation, JAPAN* <sup>3</sup> *University of Florida, USA*
- 10:45-11:25 **SS1\_3 Pixels on The Road - Where Are They Headed? (INVITED)**  
D.S. Hermann<sup>1,\*</sup>  
<sup>1</sup> *Volvo Cars, SWEDEN*

— *Coffee Break* —

**Special Symposium 2 : Market overview** (11:45~12:25)

- 11:45-12:25 **SS2\_1 Automotive Display Market Outlook (Subjected to Be Changed) (INVITED)**  
S. Wu<sup>1,\*</sup>  
<sup>1</sup> *Omdia, TAIWAN*

— *Lunch* —

**Special Symposium 3 : High performance automotive displays  
and manufactures** (13:55~15:15)

- 13:55-14:35 **SS3\_1 High-Performance Interactive Display Technologies for Automotive Applications (INVITED)**  
Y. Ito<sup>1,\*</sup> and H. Ikeno<sup>1</sup>  
<sup>1</sup> *Tianma Japan, JAPAN*
- 14:35-15:15 **SS3\_2 Manufacturing Equipment Technology for Automotive Display (INVITED)**  
T. Kikuchi<sup>1,\*</sup>  
<sup>1</sup> *ULVAC, Inc.*

— *Coffee Break* —

## **Special Symposium 4 : Free-form, bendable automotive display and unit of mobility and innovation systems (15:35~16:55)**

**15:35-16:15 SS4\_1 OLCD in Automotive Applications – Enabling Curved and Non-Rectangular Form Factors with Conformable Displays (INVITED)**

J. Huggins<sup>1,\*</sup>, M. Wheeler<sup>1)</sup>, A. Russell<sup>1)</sup> and A. James<sup>1)</sup>

<sup>1)</sup> *FlexEnable, UK*

**16:15-16:55 SS4\_2 Creating the Mobility and Technology Experience – Trip specific assessment of automotive display applications (INVITED)**

Dipl.-Wi.-Ing. Sebastian Stegmüller<sup>1,\*</sup>)

<sup>1)</sup> *Fraunhofer Institute for Industrial Engineering IAO, GERMANY*

**Closing (16:55~17:05)**

Date: Thursday, July 7

**Session 1 : Emerging Science, Materials, and Engineering  
in Solar Cells** (9:15~10:25)

- 09:15-09:40 **1\_1 Crystal Chemistry of Organo-Lead Halide Perovskite Solar Cells**  
S. Uchida<sup>1,\*</sup>  
<sup>1)</sup> *University of Tokyo, JAPAN*
- 09:40-10:05 **1\_2 Advanced Technologies for Ultra-Flexible and Highly Stable Organic Solar Cells (INVITED)**  
K. Fukuda<sup>1,\*</sup> and T. Someya<sup>1,2)</sup>  
<sup>1)</sup> *RIKEN, JAPAN* <sup>2)</sup> *The University of Tokyo, JAPAN*
- 10:05-10:25 **1\_3 Stabilizing Perovskite Crystals by Fixing The Position of Potassium Ion**  
C. Zhang<sup>1)</sup> and H. Okada<sup>1,\*</sup>  
<sup>1)</sup> *University of Toyama, JAPAN*

— *Coffee Break* —

**Symposium 3 : Recent Advances in TFT Technologies  
for Future Electronics** (10:45~12:15)

- 10:45-11:15 **S3\_1 Recent Progress of Oxide TFT Based Inverter Technology (INVITED)**  
K. Nomura<sup>1,\*</sup>  
<sup>1)</sup> *University of California San Diego, USA*
- 11:15-11:45 **S3\_2 Ferroelectric Thin-Film Transistors for Memory and Neuromorphic Device Applications (INVITED)**  
J. Lee<sup>1,\*</sup>  
<sup>1)</sup> *POSTECH, KOREA*
- 11:45-12:15 **S3\_3 T-Shaped Poly-Si Thin-Film Transistor Technology for Advanced Logic and RF Applications (INVITED)**  
H. Lin<sup>1,\*</sup>, C. Lee<sup>1)</sup>, P. Yu<sup>1)</sup>, P. Li<sup>1)</sup>, K. Chen<sup>2)</sup> and G. Huang<sup>2)</sup>  
<sup>1)</sup> *National Yang Ming Chiao Tung University, TAIWAN* <sup>2)</sup> *Taiwan Semiconductor Research Institute (TSRI), TAIWAN*

— *Lunch* —

**Symposium 4: Development of Emerging  
and Neuromorphic Devices** (13:45~15:15)

- 13:45-14:15 **S4\_1 Development of Neuromorphic Systems and Emerging Devices : Revolutionize Artificial Intelligence with Your Devices !! (INVITED)**  
M. Kimura<sup>1,2,\*</sup>  
<sup>1)</sup> *Ryukoku University, JAPAN* <sup>2)</sup> *Nara Institute of Science and Technology, JAPAN*
- 14:15-14:45 **S4\_2 Construction of a neural network using organic materials and ions (INVITED)**  
N. Hagiwara<sup>2)</sup>, S. Kan<sup>2)</sup>, T. Asai<sup>2)</sup> and M. Akai-kasaya<sup>1,2,\*</sup>  
<sup>1)</sup> *Osaka University, JAPAN* <sup>2)</sup> *Hokkaido University, JAPAN*
- 14:45-15:15 **S4\_3 In-Material Computing Devices Composed of Random Network Nanoparticles for Future Autonomous Robot Operation (INVITED)**  
H. Tanaka<sup>1,\*</sup>  
<sup>1)</sup> *Kyushu Institute of Technology, JAPAN*

**Poster Session** (15:30~17:00)

- P\_1 Novel AMOLED Compensation Pixel Circuit Design with Low Frame Rate for Portable Displays**  
C. Fan<sup>1,2)</sup>, W. Lin<sup>1,\*</sup> and C. Chen<sup>1)</sup>  
<sup>1)</sup> National Taiwan University of Science and Technology, TAIWAN
- P\_2 New Compensating Pixel Circuit to Mitigate Impact of Leakage Currents on OLED Currents for AMOLED Displays**  
W. Shieh<sup>1,\*</sup>, C. Tsai<sup>1)</sup>, B. Chen<sup>1)</sup> and C. Lin<sup>1)</sup>  
<sup>1)</sup> National Cheng Kung University, TAIWAN
- P\_3 Dependence of Conversion Properties in GTO Thin Film Thermoelectric Devices on Hydrochloric Acid Concentration in Mist CVD Method**  
R. Ito<sup>1,\*</sup>, S. Sugisaki<sup>1)</sup>, Y. Yamamoto<sup>1)</sup>, N. Shibata<sup>1)</sup> and M. Kimura<sup>1)</sup>  
<sup>1)</sup> Ryukoku University, JAPAN
- P\_4 Spike-Timing-Dependent-Plasticity Characterization of Ga-Sn-O Thin Film Synaptic Device**  
K. Yachida<sup>1,\*</sup>, T. Katagiri<sup>1)</sup>, N. Komai<sup>1)</sup>, N. Sahara<sup>1)</sup> and M. Kimura<sup>1,2)</sup>  
<sup>1)</sup> Ryukoku University, JAPAN <sup>2)</sup> Nara Institute of Science and Technology, JAPAN
- P\_5 Research on structural stabilization method of GeO<sub>2</sub> film and improvement of electrical characteristics**  
H. Iino<sup>1,\*</sup>, T. Shibuya<sup>1)</sup>, Y. Iwazaki<sup>1)</sup> and T. Ueno<sup>1)</sup>  
<sup>1)</sup> Tokyo University of Agriculture and Technology, JAPAN
- P\_6 Study on Fabrication of GeO<sub>2</sub>/Ge Structure with Good Interfacial Properties**  
K. Ito<sup>1)</sup>, K. Matsuura<sup>1,\*</sup>, H. Takahashi<sup>1)</sup>, H. Saito<sup>1)</sup>, Y. Iwazaki<sup>1)</sup> and T. Ueno<sup>1)</sup>  
<sup>1)</sup> Tokyo University of Agriculture and Technology, JAPAN
- P\_7 Solid-Phase Crystallization Characteristics of Interface-Modulated Sn-Doped Ge Thin Films on Insulator with Capping**  
T. Nagano<sup>1,\*</sup>, R. Hara<sup>1)</sup> and T. Sadoh<sup>1)</sup>  
<sup>1)</sup> Kyushu University, JAPAN
- P\_8 Interplay of Viscosities in Controlling The Orientation of Conjugated Polymer Thin Films Fabricated by Floating Film Transfer Method**  
S. Sharma<sup>1,\*</sup>, A.K. Vats<sup>2)</sup>, S. Nagamatsu<sup>1)</sup> and S.S. Pandey<sup>1)</sup>  
<sup>1)</sup> Kyushu Institute of Technology, JAPAN <sup>2)</sup> Nara Advanced Institute of Science and Technology, JAPAN
- P\_9 GTO thin film thermoelectric conversion device annealed in vacuum and in air**  
Y. Yamamoto<sup>1,\*</sup>, R. Ito<sup>1)</sup>, N. Shibata<sup>1)</sup> and M. Kimura<sup>1)</sup>  
<sup>1)</sup> Ryukoku University, JAPAN
- P\_10 Fabrication and Characterization of Oriented Thin Films of DPP-Based Conjugated Copolymer Prepared by Friction Transfer Method**  
Y. Kurokawa<sup>1,2,\*</sup>, A.K. Vats<sup>2)</sup>, S. Nagamatsu<sup>3)</sup> and S.S. Pandey<sup>1)</sup>  
<sup>1)</sup> Graduate School of Life Science and Systems Engineering, JAPAN <sup>2)</sup> Nara Institute of Science and Technology, JAPAN <sup>3)</sup> Kyushu Institute of Technology, JAPAN
- P\_11 Fabrication of ZnO Nanorods and Applied for Flexible Dye-Sensitized Solar Cells**  
H.S. Wai<sup>1,\*</sup>, M. Morimoto<sup>1)</sup> and C. Li<sup>1)</sup>  
<sup>1)</sup> Kochi University of Technology, JAPAN
- P\_12 Photoinduced Phase Transition and Subsequent Change in Adhesion Property of Cyanostilbene Liquid Crystalline Polymer Composite**  
M. Kondo<sup>1,\*</sup>, S. So<sup>1)</sup>, T. Nagata<sup>1)</sup>, H. Adachi<sup>1)</sup>, D. Okai<sup>1)</sup> and N. Kawatsuki<sup>1)</sup>  
<sup>1)</sup> University of Hyogo, JAPAN
- P\_13 Photon Flux Density Dependence of Nanographene Synthesis by Soft X-Ray Irradiation From Pentacene-Based Molecules Prepared on Ni Films by Hot Mesh Deposition**  
A. Heya<sup>1,\*</sup>, K. Kanda<sup>1)</sup>, R. Yamasaki<sup>2)</sup> and K. Sumitomo<sup>1)</sup>  
<sup>1)</sup> University of Hyogo, JAPAN <sup>2)</sup> Tocalo Co., Ltd., JAPAN
- P\_L1 Fixed Charge Induced by Ion Implantation Used to Control The Threshold Voltage for Oxide TFTs**  
T. Sakai<sup>1,\*</sup>, D. Matsuo<sup>1)</sup>, M. Fujiwara<sup>1)</sup>, D. Azuma<sup>1)</sup>, Y. Setoguchi<sup>1)</sup>, Y. Andoh<sup>1)</sup>, E. Takahashi<sup>1)</sup> and T. Sameshima<sup>2)</sup>  
<sup>1)</sup> NISSIN ELECTRIC CO., JAPAN <sup>2)</sup> Tokyo University of Agriculture and Technology, JAPAN

- P\_L2 Performance of N- and P-Ch Self-Aligned Planar Double-Gate Cu-MIC Poly-Ge TFTs on Glass Substrates**  
S. Suzuki<sup>1,\*</sup>, K. Tomizuka<sup>1)</sup> and A. Hara<sup>1)</sup>  
<sup>1)</sup> *Tohoku Gakuin University, JAPAN*
- P\_L3 Four-Terminal Poly-Si Thin-Film Transistors with High-K Gate Dielectric on Glass Substrate and Its Application in CMOS Inverters**  
K. Nomura<sup>1,\*</sup>, A. Nagayosi<sup>1)</sup> and A. Hara<sup>1)</sup>  
<sup>1)</sup> *Tohoku Gakuin University, JAPAN*
- P\_L4 In-Ga-Zn-O TFT Using Hf<sub>0.5</sub>Zn<sub>0.5</sub>O<sub>2</sub> Deposited by RF Magnetron Sputtering As The Gate Insulating Film**  
T. Fukui<sup>1,\*</sup>, K. Nakagawa<sup>1)</sup>, R. Edahiro<sup>1)</sup>, H. Kawanishi<sup>1)</sup> and M. Kimura<sup>1)</sup>  
<sup>1)</sup> *Ryukoku University, JAPAN*
- P\_L5 Influence of Sn Concentration on The Performance of Solution Combustion Synthesis-Assisted Si<sub>x</sub>Sn<sub>y</sub>O Thin-Film Transistors**  
C.G.P. Quino<sup>1,\*</sup>, J.P. Bermundo<sup>1)</sup>, M. Uenuma<sup>1)</sup> and Y. Uraoka<sup>1)</sup>  
<sup>1)</sup> *Nara Institute of Science and Technology, JAPAN*
- P\_L6 Investigation of Infrared Absorption Properties of InGaZnO Thin Film in TFT Using Monochromated STEM-EELS**  
N. Kawasaki<sup>1,\*</sup>, S. Inamoto<sup>1)</sup> and Y. Otsuka<sup>1)</sup>  
<sup>1)</sup> *Toray Research Center Inc., JAPAN*
- P\_L7 Fabrication and Characteristics of Weak Microcavity AC-Driven Insulated Polymer Electroluminescent Devices with Dielectric Film Mirrors Utilizing Ferroelectric Polymer Poly(Vinylidene Fluoride-Trifluoroethylene) Film**  
H.Kajii<sup>1,\*</sup>, Y. Takayama<sup>1)</sup>, M. Morifuji<sup>1)</sup> and M. Kondow<sup>1)</sup>  
<sup>1)</sup> *Osaka University, JAPAN*
- P\_L8 Synaptic Characteristics of Ferroelectric Capacitors for Neuromorphic Systems**  
Y. Ishisaki<sup>1,\*</sup>, O. Tanaka<sup>1)</sup>, T. Kuwahara<sup>1)</sup>, H. Kawanishi<sup>1)</sup> and M. Kimura<sup>1)</sup>  
<sup>1)</sup> *Ryukoku University, JAPAN*
- P\_L9 ReRAM Multi-Level Characteristics for Analog Computing**  
T. Katagiri<sup>1,\*</sup>, K. Morigaki<sup>1)</sup>, K. Yachida<sup>1)</sup>, H. Kawanishi<sup>1)</sup> and M. Kimura<sup>1)</sup>  
<sup>1)</sup> *Ryukoku University, JAPAN*

Date: Friday, July 8

**Session 2 : Recent Progress in Flat Panel Display 1** (9:15~10:20)

- 09:15-09:40 **2\_1 FOD Solution with High-PPI Flexible Image Sensor under OLED Panel (INVITED)**  
F. Lu<sup>1,\*</sup>, H. Yu<sup>1</sup>, K. Li<sup>1</sup>, W. Guo<sup>1</sup>, Q. Yao<sup>1</sup>, Y. Zeng<sup>1</sup>, Y. Wu<sup>1</sup> and Y. Ding<sup>1</sup>  
<sup>1)</sup> *Shanghai Tianma Microelectronics Co., CHINA*
- 09:40-10:00 **2\_2 Stretchable AMOLED Display Pixel Circuit Compensating for V<sub>Th</sub> Variation and Strain Effect**  
J. Kang<sup>1,\*</sup>, K. Kang<sup>1</sup>, J. Park<sup>1</sup>, M. Kong<sup>1</sup> and S. Lee<sup>1</sup>  
<sup>1)</sup> *Seoul National University, KOREA*
- 10:00-10:20 **2\_3 Crosstalk and Uniformity Analysis of Fingerprint-On-Display Technology Using Pinhole Imaging Technique**  
M.A.B. Misran<sup>1,\*</sup> and R. Hattori<sup>1</sup>  
<sup>1)</sup> *Kyushu University, JAPAN.*

— Coffee Break —

**Session 3 : Intelligent devices and systems**

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

- 10:40-11:05 **3\_1 Phase Diagram Construction Supported by Artificial Intelligence (INVITED)**  
R. Tamura<sup>1,\*</sup>  
<sup>1)</sup> *International Center for Materials Nanoarchitectonics(MANA), National Institute for Materials Science, JAPAN*
- 11:05-11:25 **3\_2 Character Inference Learning for Stacked Neuromorphic Devices Using IGZO Thin Films**  
E. Iwagi<sup>1,\*</sup>, M. Kimura<sup>1,2)</sup>  
<sup>1)</sup> *Ryukoku University, JAPAN* <sup>2)</sup> *Nara Institute of Science and Technology, JAPAN*
- 11:25-11:45 **3\_3 Structural Modification of Solution-Processed Barium Titanate/Polysiloxane Nanocomposite for Memory Application**  
A.S. Safaruddin<sup>1,\*</sup>, J.P.S. Bermundo<sup>1</sup>, M. Uenuma<sup>1</sup>, A. Yamamoto<sup>2)</sup>, M. Kimura<sup>3)</sup> and Y. Uraoka  
<sup>1)</sup> *Nara Institute of Science and Technology, JAPAN* <sup>2)</sup> *Merck Electronics, JAPAN* <sup>3)</sup> *Ryukoku University, JAPAN*

— Lunch —

**Session 4:Recent Progress in Flat Panel Display 2** (13:15~14:15)

- 13:15-13:35 **4\_1 Material Networks for Neuromorphic Computing**  
T. Matsumoto<sup>1,\*</sup>  
<sup>1)</sup> *Osaka University, JAPAN*
- 13:35-13:55 **4\_2 High-Performance Bio-Memristive Devices with Natural Egg Albumen as a Switching Layer**  
S. Chattaraj<sup>1</sup>, A. Dwivedi<sup>1</sup>, G. Konwar<sup>1</sup>, A. Lodhi<sup>1</sup>, S. Saini<sup>1</sup> and S.P. Tiwari<sup>1,\*</sup>  
<sup>1)</sup> *Indian Institute of Technology Jodhpur, INDIA*
- 13:55-14:15 **4\_3 Fabrication of ZnCuInS/ZnS Based Quantum-Dot Light-Emitting Diodes with Variation of Hole Transport Materials in Mixed Single Layer**  
M.M.R. Biswas<sup>1,\*</sup> and H. Okada<sup>1</sup>  
<sup>1)</sup> *University of Toyama, JAPAN*

## **Session 5 : Advanced Process and Materials for TFT and Display Technologies (14:35~15:40)**

- 14:35-15:00 5\_1 Solid Phase Crystallization of Hydrogenated Indium Oxide (InO<sub>x</sub>:H) for High Mobility Thin-Film Transistors (INVITED)**  
M. Furuta<sup>1,\*</sup>, T. Kataoka<sup>1</sup>, Y. Magari<sup>2</sup> and W. Yeh<sup>2</sup>  
<sup>1</sup> Kochi University of Technology, JAPAN <sup>2</sup> Shimane University, JAPAN
- 15:00-15:20 5\_2 High Performance Flexible Organic Transistors with Biodegradable Natural-Protein Based Gate Dielectrics**  
G. Konwar,<sup>1,\*</sup> P. Saxena<sup>1</sup>, V. Raghuwanshi<sup>1</sup>, S. Rahi<sup>1</sup> and S.P. Tiwari<sup>1</sup>  
<sup>1</sup> Indian Institute of Technology Jodhpur, INDIA
- 15:20-15:40 5\_3 Comparative Study of Cu Film Properties on CuMn and Mo Adhesion Layers Use as Bottom Electrodes in Display Devices**  
H. Kim<sup>1,\*</sup>, B. Zhu<sup>1</sup>, M. Huang<sup>1</sup>, R. Vaddi<sup>1</sup> and R.G. Manley<sup>1</sup>  
<sup>1</sup> Corning Research and Development Corporation, USA

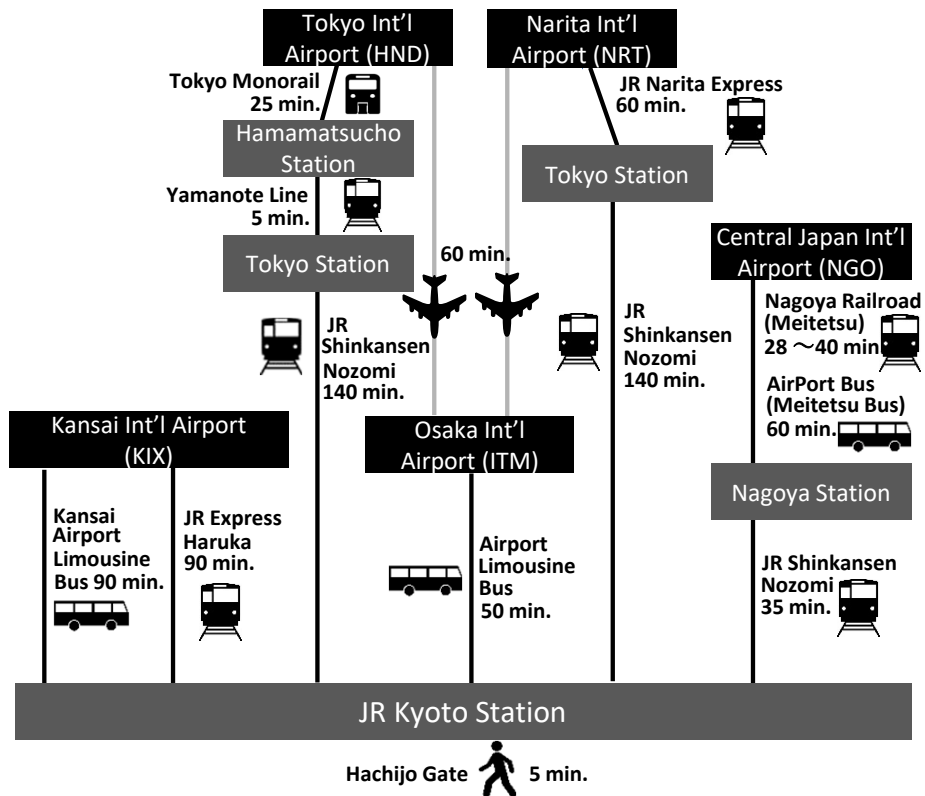
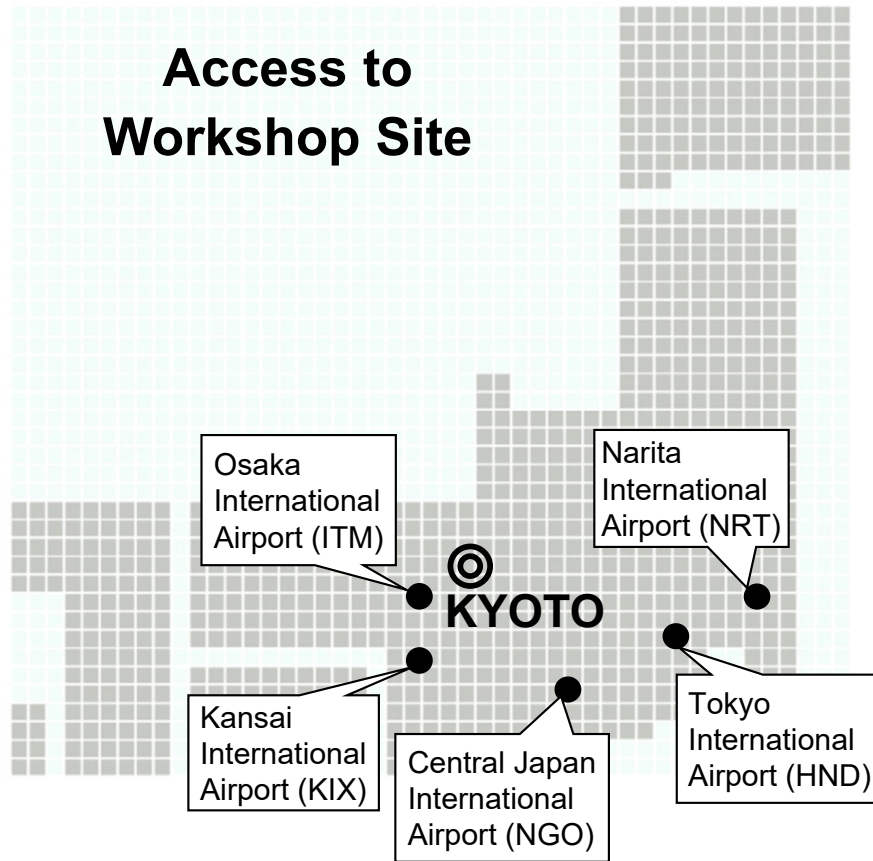
## **LATE NEWS**

- 15:40-15:55 L\_1 Direct Patterning Process Development for Solution Based Electrodes of TFTs**  
S. Tanaka<sup>1,\*</sup>, M. Miyakawa<sup>1</sup>, H. Tsuji<sup>1</sup>, T. Takei<sup>1</sup> and M. Nakata<sup>1</sup>  
<sup>1</sup> NHK Science & Technology Research Laboratories, JAPAN
- 15:55-16:10 L\_2 Electrical Performance Improvement of All-Solution Processed Indium Zinc Oxide Thin-Film Transistor by UV-Irradiation Treatment**  
U. Hanifah<sup>1,\*</sup>, J.P.S. Bermundo<sup>1</sup>, M. Uenuma<sup>1</sup> and Y. Uraoka<sup>1</sup>  
<sup>1</sup> Nara Institute of Science and Technology, JAPAN

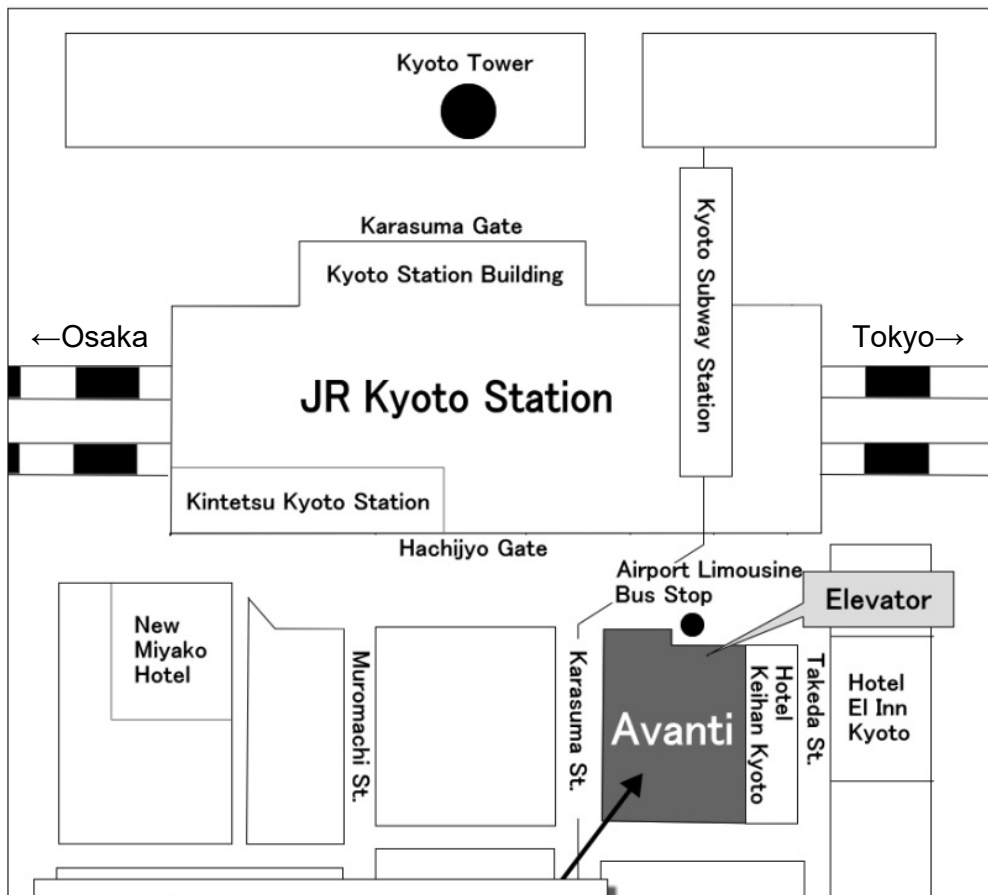
**Closing Remarks (16:10~16:15)**



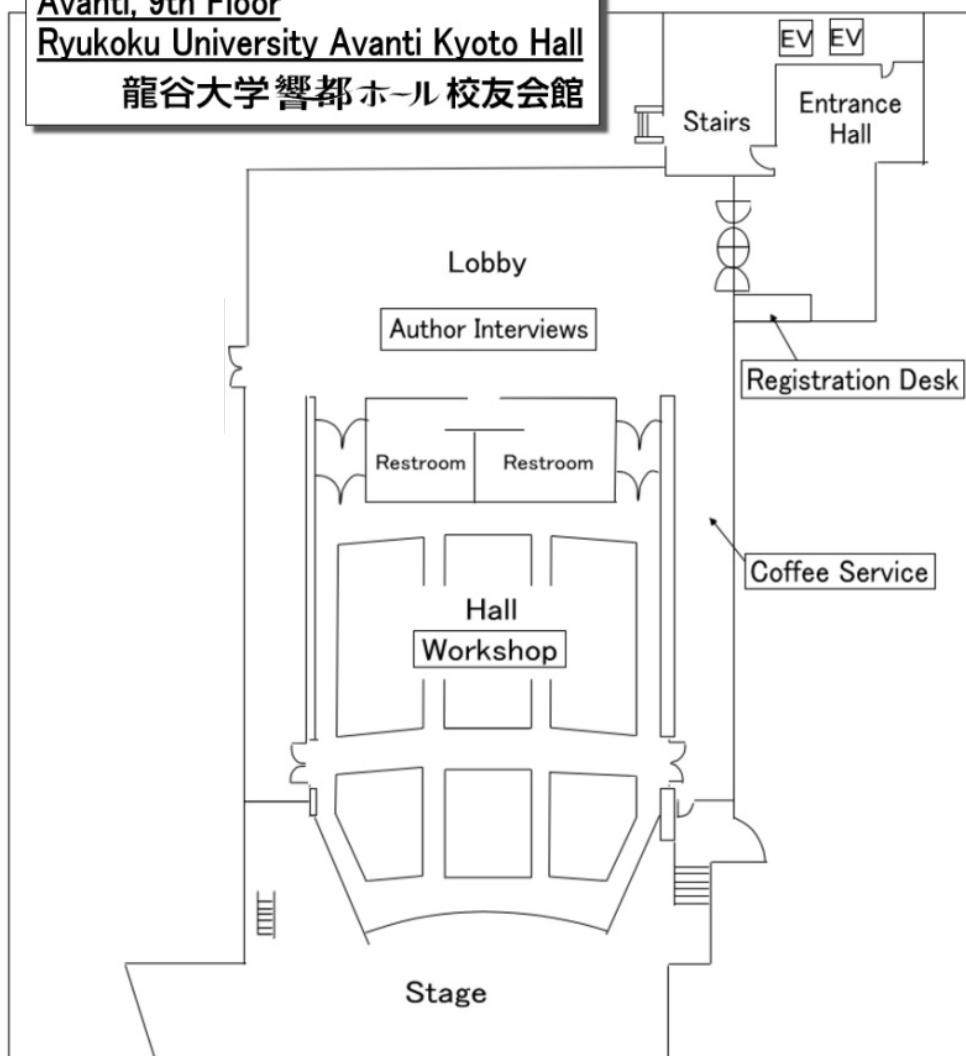
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ACTIVE-MATRIX FLATPANEL DISPLAYS AND DEVICES  
— TFT TECHNOLOGIES AND FPD MATERIALS —  
(AM-FPD '22)**

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