

PROGRAM

AM-FPD 18

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

-TFT TECHNOLOGIES AND FPD MATERIALS-

JULY 3-6, 2018

Ryukoku University Avanti Kyoto Hall

Kyoto, Japan

Sponsorship:

International Society of Functional Thin Film Materials & Devices

Co-Sponsorship:

The Japan Society of Applied Physics

Technical Sponsorship:

The Electrochemical Society - Electronics and Photonics Division -

The Electrochemical Society - Japan Section -

IEEE Electron Devices Society

In cooperation with:

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

Japanese Liquid Crystal Society

Thin Film Materials & Devices Meeting

Society of Automotive Engineers of Japan, Inc.

GENERAL INFORMATION

The 25th International Workshop on Active-Matrix Flatpanel Displays and Devices (AM-FPD '18) will be held at Ryukoku University Avanti Kyoto Hall, Kyoto, Japan from July 3 (Tuesday) to 6 (Friday), 2018. 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.

SITE

Ryukoku University Avanti Kyoto Hall (Avanti 9th Floor)
31 Higashikujyo-nishisannouchi, Minami-ku, Kyoto 601-8003, Japan
(see the map on page 23, 24)

AM-FPD '18 Secretariat Tel: +81-475-23-1150

WORKSHOP THEME

AM-FPD '18 will prepare an attractive program focusing on “*Do Thin Film Devices Dive into IoT's Ocean? - Display 4.0 -*”.

SYMPOSIA

In addition to the regular sessions, symposia, “*Innovative TFT Technology for New Applications*”, “*Advance in Perovskite Materials*” and “*Advanced Fabrication and Processing of Functional Thin Films and Materials*” 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	30 min.	25 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.
Poster	15:50-18:15, July 5		
Late News	15 min.	12 min.	3 min.

THE PROCEEDINGS OF AM-FPD '18

The Proceedings of AM-FPD '18 will be distributed from July 3 at the Registration Desk.

LANGUAGE

The official language of the workshop is English.

REGISTRATION

The Registration Desk will be open in front of Ryukoku University Avanti Kyoto Hall from Tuesday to Friday.

The registration hours are as follows:

Tuesday, July 3	9:30-17:00
Wednesday, July 4	9:15-17:00
Thursday, July 5	9:15-16:30
Friday, July 6	9:15-15:00* ¹

For Advance Registration, access our online registration page (<http://www.amfpd.jp>) and enroll your information and complete payment by June 6(JST). Registration and other fees should be paid in Japanese yen via bank transfer*² or credit cards. VISA, Master, DC, AMEX, Diners, Nicos and JCB are acceptable. After your payment has been confirmed, confirmation can be downloaded from our online registration page.

*¹ Only cash is acceptable as a means of payment on July 6, 2018.

*² Bank transfer for AM-FPD

A/C No.: 3106887 Mizuho Bank, Ltd. Jugogou Branch

A/C Name: Nippon Travel Agency Co., Ltd.

Registrants living in Japan can make payment via bank transfer or credit cards. Registrants living overseas can make payment by credit cards only.

Category	Advance Registration By June 6, 2018(JST)	On-Site Registration
WORKSHOP*³		
Member* ⁴	¥50,000	¥55,000
Non-Member	¥52,000	¥57,000
Student* ⁵	¥20,000	¥22,000
TUTORIAL		
Regular	¥7,000	¥7,000
Conference Attendee & Student	¥5,000	¥5,000

*³The registration fee of the workshop includes the admission to all sessions and USB memory of the proceedings. The banquet of AM-FPD '18 will be served without additional charge.

*⁴The member of the societies which sponsor and support AM-FPD '18 (see the front cover).

*⁵Students are required to show their ID card.

BANQUET

The banquet will be held on July 4, from 18:30 to 20:30 at Mariage Grande “Glove” 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.

CANCELLATION POLICY

In case of cancellation, a written notification should be sent to NTA by e-mail (am_fpd@nta.co.jp) or by FAX (+81-43-225-2241) to avoid any trouble.

Cancel Charge

From June 7 to 25-----JPY 3,000

After June 26---100% of the registration fee / NO REFUND

The Proceedings of the AM-FPD '18(USB memory) will be sent to the attendees who have paid in 100% cancellation charge after the workshop.

Official Travel Agent

Nippon Travel Agency Co., Ltd. (NTA) has been appointed as the official travel agent for the workshop and will handle all related travel arrangements, including hotel accommodations. Inquiries and applications concerning arrangements should be addressed to:

Nippon Travel Agency Co., Ltd.(NTA)

Chiba Branch

Chiba Center Square Bldg. 4F, 2-3-16, Chuo, Chuo-ku, Chiba
260-0013, Japan

Fax: +81-43-225-2241 Tel: +81-43-227-2307

E-mail: am_fpd@nta.co.jp

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'18 workshop is held.
2. After you receive the endorsement letter,
 - Please attach your paper of AM-FPD'18 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'18.

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 '18 will be published in the IEEE Xplore digital library in around 2 months after the workshop.

TUTORIAL IN JAPANESE

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 attendees who have registered in advance. The attendees who make an entry on-site will be admitted into these classes, but no documents might be handed. These classes are available for an additional fee (see page 2.)

Tuesday, July 3 (10 : 00 ~ 12 : 00)

Chairperson : H. Okada, *Univ. of Toyama, Japan*

10:00 (T-1) Trend of FPD Manufacturing Technology and Market
Tetsuya Wadaki, *Nomura Securities Co., Ltd., Japan*

11:00 (T-2) Highly Efficient Perovskite Solar Cells: Key Points in Their Preparation
Atsushi Wakamiya, *Kyoto Univ., Japan*

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 '19 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 '18 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 '17 PAPER AWARD

Best Paper Award

(4-2) Effects of Electrode Materials on the Electrical and Bending Performance of Memory Thin Film Transistors Using P(VDF-TrFE) Gate Insulator and IGZO Active Channels
Ji-Hee Yang, Da-Jeong Yun, Gi-Ho Seo, Sung-Min Yoon, *Kyung Hee Univ., Korea*

Poster Award

(P-19) Fluorine Doped Zinc Oxynitride Thin Film Transistors Fabricated by RF Reactive Co-Sputtering
Hyoung-Do Kim, Jong-Heon Kim, Dae-Gyu Yang, Hyun-Suk Kim, *Chungnam Nat'l Univ., Korea*

Student Paper Award

Hiroyuki Kanda, *Univ. of Hyogo., Japan*

(2-3) Bromine Doped Perovskite / Textured Silicon Heterojunction for Mechanically Stacked Tandem Solar Cell

AMFPD-ECS Japan Section Young Researcher Award

Daisuke Matsuo, *Nissin Electric Co., Ltd., Japan*

(P-L2) High Reliability a-InGaZnO TFT by Inductively Coupled Plasma Sputtering System

ORGANIZING COMMITTEE

Chair: Hiroki Hamada (*Kinki Univ.*)
Vice-Chair: Hiroshi Tsutsu (*Japan Display*)
Members: Toshiaki Fujino (*Mitsubishi Electric*)
Taketsugu Itoh (*Corning Japan*)
Junya Kiyota (*ULVAC*)
Yue Kuo (*Texas A&M Univ.*)
Atsushi Masuda (*AIST*)
Takuya Matsuo (*Sharp*)
Akira Okada (*Okayama Univ.*)
Nobuo Sasaki (*Sasaki Consulting*)
Kenji Sera (*Tianma Japan*)
Advisor : Makoto Ohkura

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Naoto Matsuo (*Univ. of Hyogo*)
Hiroyuki Okada (*Univ. of Toyama*)

PROGRAM COMMITTEE

- Chair:** Hiroyuki Okada (*Univ. of Toyama*)
- Vice-Chairs:** Masatoshi Kitamura (*Kobe Univ.*)
Sung-Min Yoon (*Kyung Hee Univ.*)
Shun-Wei Liu (*Ming-Chi Univ. of Technol.*)
Norbert Fruehauf (*Univ. of Stuttgart*)
Yue Kuo (*Texas A&M Univ.*)
Meng Tao (*Arizona State Univ.*)
- Members:** Byung Seong Bae (*Hoseo Univ.*)
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Isao Suzumura (*Japan Display*)
Kazushige Takechi (*Tianma Japan*)
Taishi Takenobu (*Nagoya Univ.*)
Yasuhiro Terai (*JOLED*)
Yung-Hui Yeh (*ITRI*)
Atsushi Wakamiya (*Kyoto Univ.*)

PROGRAM

Tuesday, July 3

Opening Session (13 : 30 ~ 13 : 45)

Chairperson : Y. Uraoka, *NAIST, Japan*

Welcome Address

H. Hamada, *Kinki Univ., Japan*

Award Presentation

Session 1 : Keynote Address (13 : 45 ~ 14 : 45)

Chairpersons : H. Okada, *Univ. of Toyama, Japan*

- 13 : 45 (1-1) Large Area Microelectronics - Technology and Trends (Invited)
N. Fruehauf, N. Kammoun, S. A. A. Nuayer, C. Reiner-Weiss,
P. Schalberger, *Univ. of Stuttgart, Germany*
- 14 : 15 (1-2) Hybrid Photovoltaics Based on Nano-Structured Organic Solar Cells
(Invited)
H. Segawa, *The Univ. of Tokyo, Japan*

— Coffee Break —

Session 2 : Advance in Photovoltaic Technologies (15 : 00 ~ 16 : 05)

Chairpersons : Y. Ishikawa, *NAIST, Japan*

A. Wakamiya, *Kyoto Univ., Japan*

- 15 : 00 (2-1) Nanoscale Tunable Optics for Photovoltaics and Beyond (Invited)
A. Dmitriev, *Univ. of Gothenburg, Sweden*
- 15 : 25 (2-2) Effect of High Impulse Voltage on Potential Induced Degradation in
Crystalline Silicon Photovoltaic Modules
K. Suy¹, T. Kaneko¹, Y. Hara², A. Masuda², M. Isomura¹, ¹*Tokai Univ.,
Japan*, ²*Nat'l Inst. of Advanced Industrial Sci. and Technol. (AIST), Japan*
- 15 : 45 (2-3) Fast Optical Characterization of Microvoid Size in Hydrogenated
Amorphous Silicon : Study on the Universal Applicability of the
Correlation between the Microvoid Size and the Optical Constant
N. Matsuki¹, T. Matsui², K. Michishio², B. E. O' Rourke², N. Oshima²,
A. Uedono³, ¹*Kanagawa Univ., Japan*, ²*Nat'l Inst. of Advanced Industrial
Sci. and Technol. (AIST), Japan*, ³*Univ. of Tsukuba, Japan*

Special Session 1 : Quantum Dot Devices and Applications (16 : 05 ~ 17 : 20)

Chairpersons : R. Hattori, *Kyushu Univ., Japan*
T. Arai, *JOLED, Japan*

16 : 05 (SP1-1) Progress in the Development of Heavy Metal-Free Quantum Dots for Electroluminescent Displays (Invited)
N. L. Pickett, S. K. Stubbs, N. C. Gresty, *Nanoco Technologies Ltd., UK*

16 : 30 (SP1-2) High Efficiency Inverted Quantum-Dot LED (Invited)
H. -M. Kim, J. Jang, *Kyung Hee Univ., Korea*

16 : 55 (SP1-3) Optical Characteristics of TN-LCD Combined with Inkjet Printed Quantum Dot Color Pixel Convertor (Invited)
M. Hasegawa, *Merck Performance Materials Ltd., Japan*

Author Interviews (17 : 20 ~ 17 : 50)

Wednesday, July 4

The 25th Anniversary Special Symposium : The Vehicle Displays (9 : 15 ~ 18 : 15)

Introduction (9 : 15 ~ 9 : 25)

Chairpersons : B. Straub, *Daimler AG, Germany*

Special Symposium 1 : Automotive Trends: Chances for New Display

Applications (9:25 ~ 10:45)

Chairpersons : N. Fruehauf, *Univ. of Stuttgart, Germany*

A. Okada, *Okayama Univ., Japan*

9 : 25 (SS1-1) Automotive Displays - Trends, Opportunities and Challenges (Invited)
D. S. Hermann, *Volvo Car Corp. AB, Sweden*

10 : 05 (SS1-2) Automotive Displays - Increasing and Challenging Market (Invited)
B. Straub, *Daimler AG, Germany*

— Coffee Break —

Special Symposium 2 : Seamless Display Integration: Challenges for Novel

Display Applications (11 : 00 ~ 14 : 50)

Chairpersons : B. Straub, *Daimler AG, Germany*

H. Tsutsu, *Japan Display, Japan*

11 : 00 (SS2-1) High Gamut Display for Next Generation Automotives (Invited)
R. Rao, *Harman, USA*

11 : 40 (SS2-2) Evolution of In-Vehicle Display Technology and Innovation of the Cockpit System (Invited)
Y. Muto, *Panasonic Corp., Japan*

— Lunch —

13 : 30 (SS2-3) Advantage of Head-Up Display for Automobiles (Invited)
T. Tsuchida, T. Yachida, Y. Masuya, *Nippon Seiki Co., Ltd., Japan*

14 : 10 (SS2-4) Implementation of a Sparkle Characterization Method for Anti-Glare Layers on Automotive-Displays (Invited)
V. F. Paz, S. Kohlenbecker, E. Persidis, *Robert Bosch GmbH, Germany*

— Coffee Break —

Special Symposium 3 : Enabling Innovative Display Technologies, Consumer Electronics as Pacemaker (15 : 05 ~ 17: 05)

Chairpersons : D. S. Hermann, *Volvo Car Corp. AB, Sweden*
H. Tanabe, *Tianma Japan Ltd., Japan*

15 : 05 (SS3-1) Chances and Challenges for Automotive Displays (Invited)
M. Adachi, *Japan Display Inc., Japan*

15 : 45 (SS3-2) Display Technologies for Vehicle Interior Innovation (Invited)
M. Ihara, *Sharp Corp, Japan*

16 : 25 (SS3-3) The Vehicular Display (Invited)
M. Araki, H. Taniguchi, K. Tanaka, *Mitsubishi Electric Corp., Japan*

Panel Discussion (17 : 05 ~ 18 : 05)

Coordinator : N. Fruehauf, *Univ. of Stuttgart, Germany*

Panelists : All invited speakers in Special Symposium on “The Vehicle Display”

Closing (18: 05 ~ 18 : 15)

Chairpersons : N. Fruehauf, *Univ. of Stuttgart, Germany*

Banquet (18: 30 ~ 20 : 30)

Thursday, July 5

Symposium 1 : Advance in Perovskite Materials (9 : 15 ~ 10 : 45)

Chairpersons : A. Wakamiya, *Kyoto Univ., Japan*
Y. Ishikawa, *NAIST, Japan*

9 : 15 (S1-1) Nonlinear Optical Properties of Lead Halide Perovskites (Invited)
H. Tahara, T. Yamada, T. Handa, Y. Kanemitsu, *Kyoto Univ., Japan*

9 : 45 (S1-2) Stability Issue of Perovskite Solar Cells (Invited)
S. Ito, *Univ. of Hyogo, Japan*

10 : 15 (S1-3) Efficient and Stable Perovskite-Based Optoelectronic Devices (Invited)
T. Matsushima^{1,2}, C. Qin^{1,2}, T. Fujihara³, C. Adachi^{1,2}, ¹*Kyushu Univ., Japan*, ²*Japan Sci. and Technol. Agency (JST), Japan*, ³*Inst. of Systems, Information Technologies and Nanotechnologies (ISIT), Japan*

— Coffee Break —

Symposium 2 : Innovative TFT Technology for New Applications

(11 : 00 ~ 12 : 30)

Chairpersons : M. Nakata, *NHK Sci. & Technol. Res. Labs., Japan*
M. Kimura, *Ryukoku Univ., Japan*

11 : 00 (S2-1) Electric Field Thermopower Modulation of Two-Dimensional Electron Gas
(Invited)
H. Ohta, *Hokkaido Univ., Japan*

11 : 30 (S2-2) Solution Processed Steep Subthreshold OFETs for Low-Power and High
Sensitivity Bio-Chemical Sensing (Invited)
J. Zhao, Q. Li, W. Tang, X. Guo, *Shanghai Jiao Tong Univ., China*

12 : 00 (S2-3) Flexible Organic Non-Volatile Memory with Long Retention (Invited)
S. Yoo, S. Lee, J. Yun, H. Moon, *Korea Advanced Inst. of Sci. and Technol.
(KAIST), Korea*

— Lunch —

Symposium 3 : Advanced Fabrication and Processing of Functional Thin Films and Materials (13 : 50 ~ 15 : 20)

Chairpersons : H. Kajii, *Osaka Univ, Japan*
T. Matsushima, *Kyushu Univ., Japan*

13 : 50 (S3-1) Controlling Organic/Inorganic Junctions by Covalent Tethering at the Interface (Invited)
H. Usui, *Tokyo Univ. of Agriculture and Technol., Japan*

14 : 20 (S3-2) Thermoelectric Transport in Doped Carbon Nanotube Films (Invited)
Y. Nonoguchi^{1,2}, ¹*Nara Inst. of Sci. and Technol. (NAIST), Japan*, ²*Japan Sci. and Technol. Agency (JST), Japan*

14 : 50 (S3-3) Concealed Holograms Based on Cholesteric Liquid Crystals (Invited)
H. Yoshida^{1,2}, S. Y. Cho¹, M. Ono¹, M. Ozaki¹, ¹*Osaka Univ., Japan*,
²*Japan Sci. and Technol. Agency (JST), Japan*

Author Interviews (15 : 20 ~ 15 : 50)

Poster Session (15 : 50 ~ 18 : 15)

Chairpersons : H. Okada, *Univ. of Toyama, Japan*
M. Kitamura, *Kobe Univ., Japan*
H. Kajii, *Osaka Univ., Japan*
A. Wakamiya, *Kyoto Univ., Japan*

FPDp

- (P-1) Inverted Quantum-Dot Light-Emitting Diodes with WO₃/Zinc-Tin-Oxide Electron Transporting Layers
D. -J. Kim, H. -N. Lee, *Soonchunhyang Univ., Korea*
- (P-2) Solution Processed Low-Color Temperature OLED with High Efficiency
M. Lee, D. K. Dubey, Y. C. Lo, J. -H. Jou, *Nat'l Tsing Hua Univ., Taiwan*
- (P-3) Development of Roll-to-Roll Multi-Layer Thermal Evaporation System for Flexible OLED Devices
S. Kwon¹, D. Song¹, H. Kim¹, M. Lee², K. Woo¹, ¹*Korea Inst. of Machinery & Materials, Korea*, ²*GJM Co., Ltd., Korea*
- (P-4) Laser-Scanned Programmable Perovskite-Nanocrystal Color Conversion Layers for White Light-Emitting Electrochemical Cells
W. -K. Wu¹, C. -M. Wang¹, M. -C. Chan¹, J. -Y. Lien², Y. -M. Su¹, M. Sarma³, Z. -P. Yang¹, H. -C. Su¹, K. -T. Wong³, S. -L. Wang², ¹*Nat'l Chiao Tung Univ., Taiwan*, ²*Nat'l Tsing Hua Univ., Taiwan*, ³*Nat'l Taiwan Univ., Taiwan*
- (P-5) Adjusting Correlated Color Temperature from White Light-Emitting Electrochemical Cells by Employing Electrochromic Filters
B. -R. Chiou¹, Z. -P. Yang¹, M. Sarma², H. -C. Su¹, K. -T. Wong², ¹*Nat'l Chiao Tung Univ., Taiwan*, ²*Nat'l Taiwan Univ., Taiwan*
- (P-6) Synchronization Scheme of Plural Displays for Real-Time Interaction
Y. Kim, J. Hong, S. Hong, C. Shin, S. -K. Joo, J. Byun, H. Kang, *Korea Electronics Technol. Inst., Korea*
- (P-7) Hydrogenated Amorphous Silicon Gate Driver with Charge-Holding Scheme for In-Cell Touch Panels
Y. -S. Lin, P. -C. Lai, F. -H. Chen, Z. -L. Yang, C. -L. Lin, *Nat'l Cheng Kung Univ., Taiwan*
- (P-8) Novel a-Si:H Gate Driver Circuit with High Charging and Discharging Speeds for Use in High-Resolution Liquid-Crystal Displays
W. -C. Chiu, C. -C. Hsu, P. -C. Lai, M. -X. Wang, C. -L. Lin, *Nat'l Cheng Kung Univ., Taiwan*
- (P-9) Design of Gate Driver Circuit Using a-Si:H Thin-Film Transistors with Bootstrapping Structure for High-Resolution Displays
B. -S. Chen, M. -Y. Deng, W. -S. Liao, C. -L. Lin, *Nat'l Cheng Kung Univ., Taiwan*

- (P-L1) 2-D Strain Sensors with Asymmetrically Pre-Stretched Metal Thin Film for Multidimensionally Stretchable Electronics
S. Choi, S. Kim, T. Kim, B. Lee, Y. Hong, *Seoul Nat'l Univ., Korea*

TFTp

- (P-10) Effects of Wavelength and Geometrical Condition on Photosensitivity of Self-Aligned Top-Gate Amorphous InZnO Thin Film Transistors
Y. Yang, H. Lu, X. Deng, S. Zhang, *Peking Univ., China*
- (P-11) Thin Film Logic Circuit with Metal Capping Layered Amorphous SiZnSnO Thin-Film Transistors
B. H. Lee^{1,3}, J. M. Byun^{2,3}, S. Kim¹, S. Y. Lee^{2,3}, ¹*Korea Univ., Korea*, ²*Cheongju Univ., Korea*, ³*Res. Inst. of Advanced Semiconductor Convergence Technol. (RIASCT), Korea*
- (P-12) Investigation on Solution-Processed In-Si-O Thin-Film Transistor via Spin-Coating Method
H. Hoang¹, T. Hori¹, T. Yasuda¹, T. Kizu², K. Tsukagoshi², T. Nabatame², B. N. Q. Trinh³, A. Fujiwara¹, ¹*Kwansei Gakuin Univ., Japan*, ²*Nat'l Inst. for Materials Sci. (NISM), Japan*, ³*Vietnam Nat'l Univ.-Hanoi, Vietnam*
- (P-13) Withdrawn
- (P-14) Characterizations on the Device Stabilities of the Oxide Thin Film Transistors Using In-Ga-Zn-O Channels Prepared by Atomic-Layer Deposition
S. -J. Yoon¹, N. -J. Seong², K. Choi², W. -C. Shin², S. -M. Yoon¹, ¹*Kyung Hee Univ., Korea*, ²*NCD Co. Ltd., Korea*
- (P-15) High Field-Effect Mobility Amorphous Indium-Tin-Zinc-Oxide Thin-Film Transistors Using Negatively Charged Aluminium-Oxynitride Gate Dielectrics
D. Shin, K. Jang, C. P. T. Nguyen, H. Park, J. Kim, Y. Kim, J. Yi, *Sungkyunkwan Univ., Korea*
- (P-16) Flexible Thin-Film Transistors with Vertical In-Ga-Zn-O Channel Using Atomic-Layer Deposition on Poly(Ethylene Naphthalate) Substrate
H. -R. Kim¹, J. -H. Yang¹, G. -H. Kim², S. -M. Yoon¹, ¹*Kyung Hee Univ., Korea*, ²*Electronics & Telecommunication Res. Inst. (ETRI), Korea*
- (P-17) Transparent Triple-Layer Oxide TFT for Enhanced Photo Switching Characteristics
J. Lee^{1,2}, J. Moon², J. -E. Pi², S. H. Cho², H. -O. Kim², H. Oh², C. -S. Hwang², S. -D. Ahn², S. -Y. Kang², K. -H. Kwon¹, ¹*Korea Univ., Korea*, ²*Electronics Telecommunications Res. Inst. (ETRI), Korea*

- (P-18) Withdrawn
- (P-19) Impact of Al₂O₃ Buffer Layer on Ultra-Thin Flexible Polyimide Substrates for Transparent and Flexible InGaZnO Thin Film Transistors
H. -W. Jang¹, H. -R. Kim¹, J. -H. Yang¹, C. -W. Byun², S. -M. Yoon¹,
¹*Kyung Hee Univ., Korea*, ²*Electronics & Telecommunication Res. Inst.(ETRI), Korea*
- (P-20) Characteristic Evaluation of Ga-Sn-O Thin Films by Hall Measurement
K. Imanishi, A. Fukawa, T. Matsuda, M. Kimura, *Ryukoku Univ., Japan*
- (P-21) Surface Passivation of Crystalline Silicon by Heat Treatment in Liquid Water and Its Application to Improve the Interface Properties of Metal-Oxide-Semiconductor Structures
T. Sameshima¹, M. Hasumi¹, Y. Hirokawa¹, T. Watanabe¹, M. Hino¹,
G. Kojitani¹, T. Mizuno², ¹*Tokyo Univ. of Agriculture and Technol., Japan*, ²*Kanagawa Univ., Japan*
- (P-22) Properties of Poly-Si Thin Films and Their Transistors Fabricated Using Selective Excimer Laser Annealing
T. Goto¹, K. Saito², F. Imaizumi¹, M. Hatanaka², M. Takimoto²,
M. Mizumura², J. Gotoh², H. Ikenoue³, K. Udagawa⁴, J. Kido⁴, S. Sugawa¹,
¹*Tohoku Univ., Japan*, ²*V-Technol. Co., Ltd., Japan*, ³*Kyushu Univ., Japan*, ⁴*Yamagata Univ., Japan*
- (P-23) An a-IGZO TFT AMOLED Pixel Circuit to Compensate Threshold Voltage and Mobility Variations
S. Yi, J. Wu, C. Liao, Y. Wang, X. Huo, S. Zhang, *Peking Univ., China*
- (P-24) New AMOLED Pixel Circuit to Compensate Characteristics Variations of LTPS TFTs and Voltage Drop
J. Wu, S. Yi, C. Liao, X. Huo, Y. Wang, S. Zhang, *Peking Univ., China*
- (P-25) Withdrawn
- (P-26) Investigation of Mechanical-Stress-Induced Electrical Failure of Oxide-Based Flexible Charge-Trap Memory Thin-Film Transistors Fabricated on Plastic Substrates
J. -H. Yang¹, G. -H. Kim², S. -M. Yoon¹, ¹*Kyung Hee Univ., Korea*, ²*Electronics & Telecommunication Res. Inst.(ETRI), Korea*
- (P-27) Nonvolatile Memory TFT Using Neutral Particle Beam at Room Temperature to Generate Mobile Protons Moving in the Gate Insulator
J. W. Yun¹, J. N. Jang², M. P. Hong¹, ¹*Korea Univ., Korea*, ²*WISOL Co., Ltd., Korea*

- (P-28) Carrier Mobility Effect of Electron Transporting Layer on OLED Performance
R. A. K. Yadav¹, D. K. Dubey¹, M. Dembla², S. Z. Chen¹, T. -W. Liang³, J. -H. Jou¹, ¹*Nat'l Tsing Hua Univ., Taiwan*, ²*Indian Inst. of Technol., India*, ³*Global Sci. Instruments Co. Ltd., Taiwan*
- (P-29) High-Efficiency Organic Light-Emitting Diodes with a Complete Cascading Carrier Injection Structure
W. -Y. Yang¹, R. A. K. Yadav¹, D. K. Dubey¹, C. -H. Hsu¹, Y. -Y. Lee¹, T. -W. Liang², J. -H. Jou¹, ¹*Nat'l Tsing Hua Univ., Taiwan*, ²*Global Sci. Instruments Co. Ltd., Taiwan*
- (P-L2) Effect of Deposition Temperature and Source Gas Chemistry in PE-CVD SiO₂ Passivation on InGaZnO TFTs
S. G. M. Aman, D. Koretomo, Y. Magari, M. Furuta, *Kochi Univ. of Technol., Japan*
- (P-L3) Biological Stimulation Performance of LTPS-TFTs Artificial Retina by Wireless Power Drive
K. Tomioka, K. Miyake, K. Misawa, M. Kimura, *Ryukoku Univ., Japan*
- (P-L4) Characterization of Excimer-Laser Doping of a Poly-Si Thin Film with a Phosphoric-Acid Coating for Thin-Film-Transistor Fabrication
K. Imokawa¹, N. Tanaka¹, A. Suwa¹, D. Nakamura¹, T. Sadoh¹, T. Goto², H. Ikenoue¹, ¹*Kyushu Univ., Japan*, ²*Tohoku Univ., Japan*
- (P-L5) Enhancement of TFT Performance by Purification of Indium-Zinc-Tin Oxide
B. R. Naik, M. N. Naik, C. Avis, J. Jang, *Kyung Hee Univ., Korea*
- (P-L6) Threshold Voltage Control of In-Ga-Zn-O TFT without Thermal Annealing Process by Inductively Coupled Plasma Sputtering System
D. Matsuo¹, T. Ikeda¹, S. Kishida¹, Y. Setoguchi¹, Y. Andoh¹, R. Miyanaga², M. N. Fujii², Y. Uraoka², ¹*Nissin Electric Co., Ltd., Japan*, ²*Nara Inst. of Sci. and Technol. (NAIST), Japan*
- (P-L7) Reliability Enhancement of Solution Processed Amorphous In-Zn-O Thin-Film Transistors via a Low Temperature (180 °C) Solution Processed Passivation
A. Syairah¹, J. P. Bermundo¹, N. Yoshida^{1,2}, T. Nonaka², M. N. Fujii¹, Y. Ishikawa¹, Y. Uraoka¹, ¹*Nara Inst. of Sci. and Technol. (NAIST), Japan*, ²*Merck Performance Materials Ltd., Japan*

PVp

- (P-30) Flexible ITO-Free Perovskite Solar Cells
M. -Y. Lin, *Nat'l United Univ., Taiwan*
- (P-31) Fabrication of Perovskite Solar Cells with E-Beam Evaporation TiO₂ Thin Films: Considering Substrate Heater
M. F. Hossain^{1,2}, S. Naka¹, H. Okada¹, ¹*Univ. of Toyama, Japan*, ²*Rajshahi Univ. of Engineering and Technol., Bangladesh*
- (P-32) Effect of Molecular Energy Level of Electron Transport Layer on Recombination Zone in OLED
D. K. Dubey¹, R. A. K. Yadav¹, M. Lee¹, S. Khan², T. -W. Liang³, J. -H. Joua¹, ¹*Nat'l Tsing Hua Univ., Taiwan*, ²*Indian Inst. of Technol. Delhi, India*, ³*Global Sci. Instruments Co. Ltd., Taiwan*
- (P-L8) Novel Facilely Synthesized Spiro[Fluorene-9,9'-Phenanthren-10'-One] in D-A-D Hole-Transporting Materials for Perovskite Solar Cells
Y. -C. Chen¹, S. -K. Huang², S. -S. Li², Y. -Y. Tsai³, C. -P. Chen³, Y. J. Chang¹, ¹*Tunghai Univ., Taiwan*, ²*Taipei Medical Univ., Taiwan*, ³*Ming Chi Univ. of Technol., Taiwan*

TFMDp

- (P-33) Fabrication of Inorganic/Organic Hybrid Distributed Bragg Reflectors Based on Inorganic CuSCN for All-Solution-Processed Polymer Light-Emitting Diodes
H. Kajii, M. Kawata, H. Okui, M. Morifuji, M. Kondow, *Osaka Univ., Japan*
- (P-34) Cellular Neural Network Using IGZO Thin Film as Synapses and LSI as Neurons
D. Yamakawa¹, Y. Shibayama¹, H. Yamane², Y. Nakashima², M. Kimura^{1,2}, ¹*Ryukoku Univ., Japan*, ²*Nara Inst. of Sci. and Technol. (NAIST), Japan*
- (P-35) Room Temperature Fabrication of Variable Resistive Memory Using Ga-Sn-O Thin Film
S. Sugiski¹, A. Kurasaki¹, R. Tanaka¹, T. Matsuda¹, M. Kimura^{1,2}, ¹*Ryukoku Univ., Japan*, ²*Nara Inst. of Sci. and Technol. (NAIST), Japan*
- (P-36) Cross-Point Device Using Ta₂O₅/Ta Layer for Synapse Element in Neural Network
R. Tanaka¹, I. Horiuchi², Y. Mogi², Y. Hiroshima², Y. Nakashima³, M. Kimura^{1,3}, ¹*Ryukoku Univ., Japan*, ²*KOA Corp., Japan*, ³*Nara Inst. of Sci. and Technol. (NAIST), Japan*
- (P-37) High Performance Sol-Gel Processed SnO₂ Thin Film Transistor with Sol-Gel Processed ZrO₂ Layers
W. -Y. Lee, B. Jang, S. Lee, T. Kim, J. Jang, *Kyungpook Nat'l Univ., Korea*

- (P-38) Sol-Gel Processed Mg-Doped In_2O_3 Thin-Film Transistors
T. Kim, B. Jang, S. Lee, W. -Y. Lee, J. Jang, *Kyungpook Nat'l Univ., Korea*
- (P-39) UV/Ozone-Process-Assisted Low-Temperature SnO_2 Thin-Film Transistors
B. Jang, W. -Y. Lee, T. Kim, S. Lee, J. Jang, *Kyungpook Nat'l Univ., Korea*
- (P-40) Large-Scale Etching of Silicon Nitride Using a Linear ECR Plasma Source with Reciprocating Substrate Motion
S. Y. Kwon, H. W. Yoon, Y. S. Jang, S. M. Shin, S. Yi, M. P. Hong, *Korea Univ., Korea*
- (P-41) Withdrawn
- (P-42) Effect of Atomic Hydrogen Annealing on $\text{AlO}_x/\text{GeO}_x/\text{a-Ge}$ Stack Structure
T. Onuki, A. Heya, N. Matsuo, *Univ. of Hyogo, Japan*
- (P-L9) Performance of Metal-Semiconductor-Metal Ultraviolet Photodetectors Based on Sol-Gel Derived $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ Semiconductor Thin Films
C. -Y. Tsay, S. -T. Chen, M. -T. Fan, *Feng Chia Univ., Taiwan*
- (P-L10) Platform for TiO_2 Electrodes Based Hydrogen Production by Microdisplay
C. -J. Ou, *Hsiuping Univ. of Sci. and Technol., Taiwan*

Friday, July 6

Special Session 2 : Novel Organic Light Emitting Devices (9 : 15 ~ 10 : 30)

Chairpersons : M. Mitani, *Sharp, Japan*
H. Nakamura, *IDEMITSU KOSAN., Japan*

9 : 15 (SP2-1) Innovative Technologies for OLED Display Manufacturing (Invited)
T. Arai, *JOLED., Japan*

9 : 40 (SP2-2) Organic Light-Emitting Devices with E-Type Delayed Fluorescence Emitters (Invited)
H. Nakanotani, *Kyushu Univ., Japan*

10 : 05 (SP2-3) Current Status of OLED Material and Process Technologies for Display and Lighting (Invited)
T. Komoda, H. Sasabe, J. Kido, *Yamagata Univ., Japan, FLASK Coop., Japan*

— Coffee Break —

Session 3 : Solution-Processed TFT Technologies (10 : 45 ~ 11 : 50)

Chairpersons : S. -M. Yoon, *Kyung Hee Univ., Korea*
M. Furuta, *Kochi Univ. of Technol., Japan*

10 : 45 (3-1) Semiconductor and Conductor Materials for Printed Oxide Thin-Film Transistors (Invited)
Y. Jo^{1,2}, S. -I. Jeong^{1,3}, J. Choi³, Y. Choi^{1,2}, S. Jeong^{1,2}, ¹*Korea Res. Inst. of Chemical Technol. (KRICT), Korea, ²Korea Univ. of Sci. and Technol. (UST), Korea, ³Chungnam Nat'l Univ., Korea*

11 : 10 (3-2) High-Performance Solution-Processed Thin-Film Transistors Using Fluorine-Doped Aqueous Metal Oxides
M. Miyakawa, M. Nakata, H. Tsuji, Y. Fujisaki, *NHK Sci. & Technol. Res. Labs., Japan*

11 : 30 (3-3) Solution-Processed Gallium-Tin-Oxide as a New Choice for Indium-Free Active Layers in TFTs
C. Liu, Z. Wang, *Sun Yat-Sen Univ., China*

— Lunch —

Session 4 : Novel Fabrication Processing and Applications (13: 20 ~ 14 : 40)

Chairpersons : H. Okada, *Univ. of Toyama, Japan*

H. Kajii, *Osaka Univ., Japan*

- 13 : 20 (4-1) Two-Step Ion Implantation Used for Activating Boron Atoms in Silicon at 300°C
T. Nagao¹, T. Uehara², K. Yasuta², Y. Inouchi¹, J. Tatemichi¹, M. Hasumi², T. Sameshima², ¹*NISSIN ION EQUIPMENT CO., LTD., Japan*, ²*Tokyo Univ. of Agriculture and Technol., Japan*
- 13 : 40 (4-2) Carbon Heating Tube Used for Rapid Heating System for Semiconductor Annealing
T. Miyazaki^{1,3}, G. Kobayashi², T. Sugawara³, T. Kikuchi³, M. Hasumi³, T. Sameshima³, ¹*Techno Res., Ltd., Japan*, ²*Orc manufacturing Co., Ltd., Japan*, ³*Tokyo Univ. of Agriculture and Technol., Japan*
- 14 : 00 (4-3) Research and Development of Ga-Sn-O Thin Films for Application to Neural Networks
K. Ikushima¹, J. Shimura¹, T. Matsuda¹, M. Kimura^{1,2}, H. Yamane², Y. Nakashima², ¹*Ryukoku Univ., Japan*, ²*Nara Inst. of Sci. and Technol. (NAIST), Japan*
- 14 : 20 (4-4) *Selective Intense Light-Induced High-Performance Washable Transparent Electrodes*
K. Woo, Z. Zhong, H. Kim, S. Kwon, D. Kang, S. -H. Lee, T. -M. Lee, J. Jo, *Korea Inst. of Machinery & Materials (KIMM), Korea*

— Coffee Break —

Session 5 : Advanced Applications of TFTs (14 : 55 ~ 16 : 00)

Chairpersons : M. Kitamura, *Kobe Univ., Japan*

N. Saito, *Toshiba Memory, Japan*

- 14 : 55 (5-1) Flexible a-IGZO TFT Technology: New Developments & Applications (Invited)
A. J. Kronemeijer, I. Katsouras, P. Poodt, H. Akkerman, A. V. Breemen, G. Gelinck, *TNO / Holst Ctr., The Netherlands*
- 15 : 20 (5-2) Demonstration of Extended-Gate Structure for pH Sensors Based on Amorphous Indium-Gallium-Zinc Oxide Thin-Film Transistors
S. Iwamatsu¹, K. Takechi², H. Tanabe², Y. Watanabe¹, ¹*Yamagata Res. Inst. of Technol., Japan*, ²*Tianma Japan, Ltd., Japan*
- 15 : 40 (5-3) Characterizations of Charge-Trap Memory Thin-Film Transistors Using HfO₂/ZnO Stack-Structured Charge-Trap Layer Controlled by Atomic Layer Deposition
S. -Y. Na, S. -M. Yoon, *Kyung Hee Univ., Korea*

Late News (16 : 00 ~ 16 : 30)

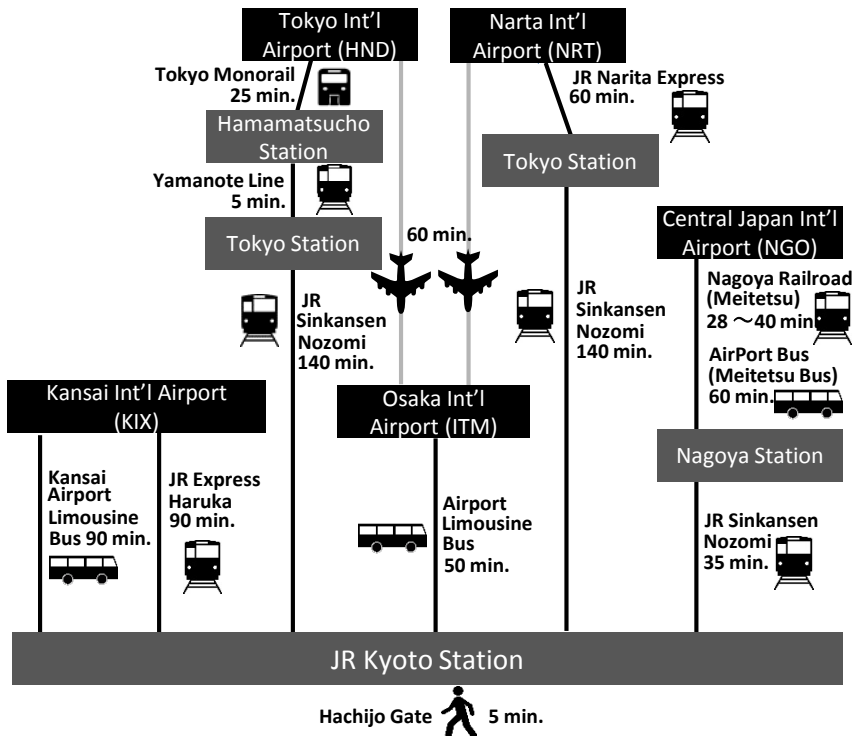
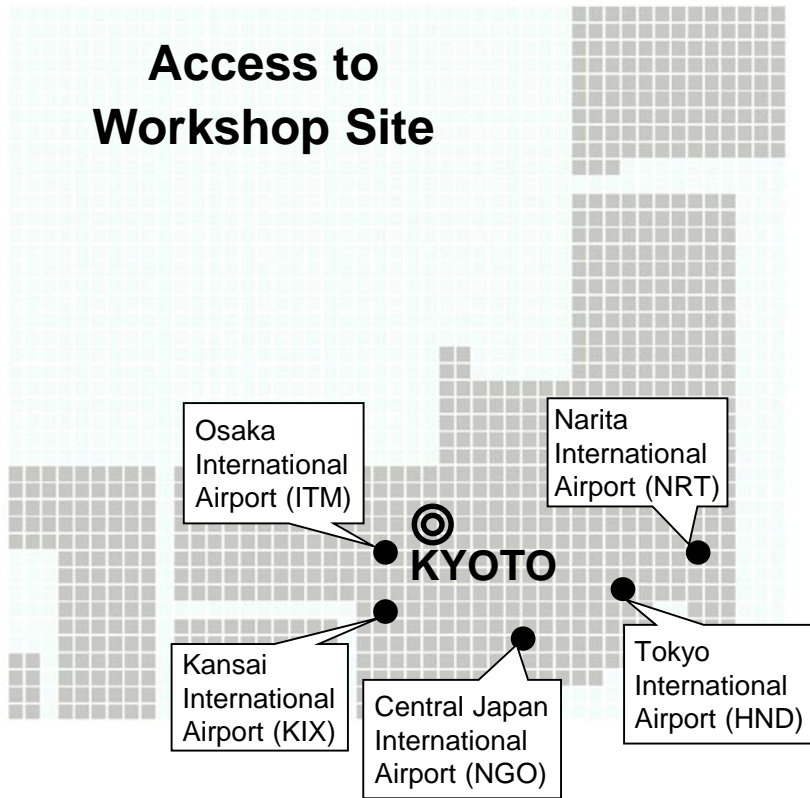
16 : 00 (L-1) Solution-Processable P-Type Transparent Amorphous Semiconductor for Flexible Electronics
T. Jun, K. Aoyama, J. Bang, J. Kim, H. Hosono, *Tokyo Inst. of Technol., Japan*

16 : 15 (L-2) Self-Aligned Four-Terminal P-Channel Cu-MIC Poly-Ge_{1-x}Sn_x Thin-Film Transistors on a Glass Substitute
R. Miyazaki, N. Nishiguchi, H. Utsumi, A. Hara, *Tohoku Gakuin Univ., Japan*

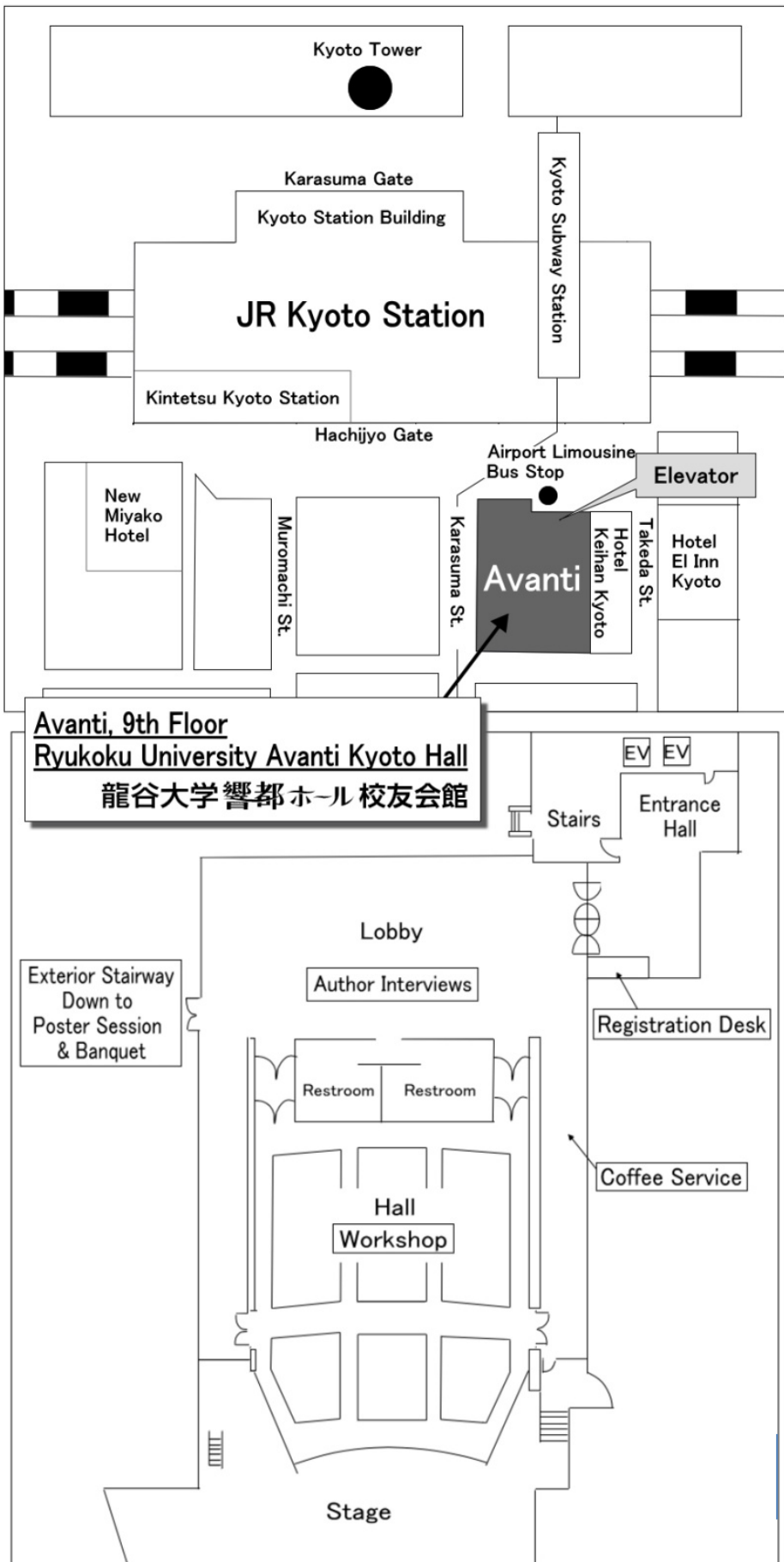
Closing Remarks (16 : 30 ~ 16 : 35)

Author Interviews (16 : 35 ~ 17 : 05)

Access to Workshop Site



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**THE TWENTY-FIFTH INTERNATIONAL WORKSHOP ON
ACTIVE-MATRIX FLATPANEL DISPLAYS AND DEVICES
— TFT TECHNOLOGIES AND FPD MATERIALS —
(AM-FPD '18)**

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