



IDW '18

THE 25TH INTERNATIONAL DISPLAY WORKSHOPS

Special Topics of Interest on

- Oxide-Semiconductor TFT
- Quantum Dot Technologies
- AR/VR and Hyper Reality
- Automotive Displays
- Wide Color Gamut and Color Reproduction
- Haptics Technologies

Topical Session on

- User Experience and Cognitive Engineering (UXC)

Workshops on

- LC Science and Technologies (LCT)
- Active Matrix Displays (AMD)
- FPD Manufacturing, Materials and Components (FMC)
- Inorganic Emissive Display and Phosphors (PH)
- OLED Displays and Related Technologies (OLED)
- 3D/Hyper-Realistic Displays and Systems (3D)
- Applied Vision and Human Factors (VHF)
- Projection and Large-Area Displays and Their Components (PRJ)
- Electronic Paper (EP)
- MEMS and Emerging Technologies for Future Displays and Devices (MEET)
- Display Electronic Systems (DES)
- Flexible Electronics (FLX)
- Touch Panels and Input Technologies (INP)

Advance Program

***Nagoya Congress Center
Nagoya, Japan
December 12 – 14, 2018***

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PROGRAM HIGHLIGHTS

The 25th International Display Workshops will be held as IDW '18 for encouraging aggressive research and development of display technologies throughout the world and especially in the Asian region. IDW '18 focuses on the following 6 special topics and 1 topical session, which are extremely timely, as well as 13 active workshops.

Special Topics of Interest on

- Oxide-Semiconductor TFT
- Quantum Dot Technologies
- AR/VR and Hyper Reality
- Automotive Displays
- Wide Color Gamut and Color Reproduction
- Haptics Technologies

Topical Sessions on

- User Experience and Cognitive Engineering

Workshops on

- LC Science and Technologies
- Active Matrix Displays
- FPD Manufacturing, Materials and Components
- Inorganic Emissive Display and Phosphors
- OLED Displays and Related Technologies
- 3D/Hyper-Realistic Displays and Systems
- Applied Vision and Human Factors
- Projection and Large-Area Displays and Their Components
- Electronic Paper
- MEMS and Emerging Technologies for Future Displays and Devices
- Display Electronic Systems
- Flexible Electronics
- Touch Panels and Input Technologies

The three-day conference will feature 407 papers, including 3 keynote addresses, 124 invited presentations, 131 oral presentations, and 149 poster presentations. Following the plenary session of keynote addresses on Wednesday morning, presentations will begin and continue in 8 parallel oral sessions through Friday. Poster sessions, author interviews, and demonstrations will enable participants to discuss topics in detail. Exhibits by universities and display industry-related businesses will also be featured from Wednesday to Friday in parallel with workshops. IDW '18 should be of interest to not only researchers and engineers, but also managers of companies and institutions in the display community.

Special Topics of Interest on Oxide-Semiconductor TFT (OXT)

Oxide semiconductor TFTs have already occupied an important position in the industry field of flat panel displays. Constituent materials, fabrication processes, characteristic enhancement technology, life-time prolonging techniques, etc. have become mature technologies. On the other hand, there is great room to improve the characteristics. All the authors will present novel oxide semiconductor materials, new device structures, solution processes, post-deposition processes, etc. Moreover, they will also propose emerging applications beyond the conventional ones. Don't miss them!!

Special Topics of Interest on Quantum Dot Technologies (QDT)

This topic will cover all aspects of the science and technologies of Quantum Dot (QD) and Quantum Rod (QR), ranging from materials research, device structure and properties, device applications for lighting and display, manufacturing and high color gamut of display using QD. This topic will specialize in QD Technologies (QDT) for the purpose of

establishing a venue for revitalization in each field.

A highlight for IDW'18 will be the development of GaN nanocolumn LED for monolithic micro-LED displays, and the narrow band-edge emission from chalcopyrite semiconductor quantum dots, ligand materials to enhance luminous efficiency and stability of perovskite quantum dots, and recent progress of QD materials (PH-WS), applications of quantum dot materials, high brightness nano/micro LED, energy-saving displays and lighting devices (MEET-WS), perovskite QD technologies, light-emitting transistors with QD and the evaluation of carrier transport properties by impedance spectroscopy method (OLED-WS) .

Special Topics of Interest on AR/VR and Hyper Reality (AR&VR)

Augmented reality (AR) and virtual reality (VR) applications employing high-performance display devices such as sensors, cameras with tracking capabilities, and computer graphics technologies have shown significant progress in the past few years.

This year we have organized six oral and three poster sessions ranging from hardware to software systems. The IDW '18 is a venue to access the versatile state-of-the-art in AR and VR.

Special Topics of Interest on Automotive Displays (AUTO)

One of the applications of display systems is in transportation systems including automobiles. From 2016, Automotive Displays (AUTO) was initiated as the new Special Topic of Interest (STI) where a lot of presentations concerning automobile displays were given. In 2018, WSs such as VHF, DES, INP, UXC, 3D, and PRJ will organize the AUTO. In "these sessions", you can hear new technological presentations, for examples, the Head-Up Display (HUD) that can give a stable display regardless of ambient light changes, and the gesture touch display in which users do not have to directly touch the surface of the display. Furthermore, flight deck display development will be reviewed. This AUTO will surely interest audiences such as users and designers of automobiles.

Special Topics of Interest on Wide Color Gamut and Color Reproduction (WCG)

Thanks to rods and three color cones in our retinas, we can enjoy the high dynamic range and wide color gamut (WCG). We need to understand our rods, cones, and nerve systems, and then to develop suitable materials, components, displays, and systems with color-gamut-expansion and color-reproduction technologies based on color/color vision research and WCG-related standardization.

Now in its second year as a Special Topics of Interest (STI), WCG STI is attracting more attention and the sessions have subsequently been expanded. . . One oral session in LCT-WS, one poster session in FMC-WS, and two oral and one poster sessions in VHF-WS await audiences composed not only of color enthusiasts but also those who just wish to listen in. The color-related materials and displays in LCT and FMC, color perception in VHF are not to be missed. With novel achievements in color vision and color conversion, you are sure to find yourself drawn into a whole new world of color.

Topical Session on User Experience and Cognitive Engineering (UXC)

The first day features two joint sessions with VHF (VHF1/UXC1, UXC2/VHF2). The presentations include education and reading. The second day features two joint sessions with INP (UXC3/INP3, INP4/UXC5). The presentations include touch, haptic feedback, and pen input. UXC4 includes the analyzation of eye movement. The third day will include a joint session with EP (UXC5/EP5). The presentations include the environmental impact of e-books and studies to compare reading on paper and reading on e-book devices.

Topical Session on Haptics Technologies (HAP)

Haptic technologies have been attracting attention in various fields as a next-generation technology to provide new user experiences. As a forum for discussing the integration of display technologies and haptic technologies, we have planned the special topic of interest on haptics display technologies, following on from the last IDW. The many invited talks will be given by leading Japanese researchers on topics such as human haptic perception and measurement, presentation, and modulation of haptic information, including pseudo-haptic display technologies for shape and human-centric flexible shape haptics technologies. In the demonstration session, participants can actually "experience" the technologies related to the talks.

Workshop on LC Science and Technologies (LCT)

The LCT workshop covers topics from fundamental studies to recent developments in LCD technologies and LC materials. Of special note this year are the 11 invited presentations related to (i) enhancement of color gamut by using quantum dots or specifically designed film, (ii) FLC technology and HUD technology for 3D displays, and (iii) LC lenses and several types of LC phase shifters including LC antennas. Moreover, several emerging technologies related to Flexible LCDs, transparent LCDs, reflective LCDs, high image quality technology by polymer stabilized technique, photoalignment technology, and analysis of display unevenness and its remedies are presented.

Workshop on Active Matrix Displays (AMD)

The AMD workshop covers oxide TFT, Si-TFT, organic/carbon TFT, micro-LED, OLED, sensors, and other devices. Recent paper presentations tend to focus on oxide TFT, which is highly expected to play a role in applications for higher resolution LC and OLED displays. We highlight the oxide TFT as a special topic of interest (STI) OXT, with three dedicated sessions covering a wide area from materials, physics, devices, and processes to applications. Furthermore, we have prepared two sessions for organic/carbon devices and 8K and micro-LED displays. We look forward to your participation!

Workshop on FPD Manufacturing, Materials and Components (FMC)

The FMC workshop (WS) covers recent developments and achievements in the field of flat panel display technologies, including display optics, materials, components, display panel manufacturing and measurements technologies. The FMC includes five sessions with three joint sessions, and six invited talks on recent topics. The oral sessions are made up of 20 papers, and the poster session contains 16 papers over five poster sessions. In the FMC sessions, recent developments and manufacturing issues of MicroLED display will be presented. In addition, papers on display optics, their concepts, metrologies, and augmented reality (AR) as well as head-mount display (HMD) using waveguides will be presented. In a materials and components session, papers on light polarization technologies will be highlighted. Furthermore, the performance properties of optical films and their materials such as cyclo-olefin, high-k insulator, MoTi wiring, and gate metal Al/Mo, will be presented.

Workshop on Inorganic Emissive Display and Phosphors (PH)

This workshop presents the latest achievements in devices and phosphors for emissive displays, lighting, and imaging. Invited talks will present emerging technologies such as GaN nanocolumn LED for micro-LED display, narrow band-edge emission from chalcopyrite semiconductor quantum dots, and self-healing phosphor for high-power LED.

Workshop on OLED Displays and Related Technologies (OLED)

The OLED workshop covers all aspects of the science and technologies of OLED, QLED and other organic devices, ranging from material science, basic device physics for OLED device and display technologies, and other applications. The oral and poster sessions will cover OLED display and device technologies, materials and process technologies for soluble OLED and advanced technologies concerning OLED/QLED devices and materials. Recent progress such as micro-OLED display, perovskite QD technologies, and automotive applications etc. will be reported on. We will also focus in special on Quantum Dot technologies (QDT) as a special topic of interest (STI) at IDW '18.

Workshop on 3D/Hyper-Realistic Displays and Systems (3D)

The 3D/hyper-realistic displays and systems workshop will consist of many papers on 3D systems and devices for holography, autostereoscopic display, integral photography, and emerging applications for AR. There will be some invited talks related to interactive displays, a novel AR display based on multiple viewpoint images, and emerging displays for VR etc. 3D poster sessions include demonstrations, which will help participants to experience the brand-new sensations of 3D images.

Workshop on Applied Vision and Human Factors (VHF)

The VHF workshop covers all ergonomic factors on human interfaces, such as visual aspects, environmental related aspects, and measurements. We have eight oral sessions and seven poster sessions, including special topic sessions on color, automotive applications, and virtual reality, in addition to HDR and physiological factors. We also have a joint session on 3D. Eight invited talks will be given in the oral sessions, concerning color gamut metrics, 8K HDR with 10,000 cd/m² of peak luminance, automotive ergonomics, AR/VR ergonomics, brain neuroimaging, and autonomic nervous system applications.

Workshop on Projection and Large-Area Displays and Their Components (PRJ)

The PRJ workshop covers the latest projection mapping, wearable applications, vehicle display and lighting technologies, solid-state light sources, lighting, holograms, short throw optics, etc., Augmented Reality / Virtual Reality, 3D measurement, standardization of wearable/new light sources and all the projection related technologies. This year's session will focus on wearable-related technologies, automotive displays and sensors, laser light sources, projection devices, solid state light source projectors, projection mapping and standardization. There will be 34 presentations in total, 26-oral and 8-poster, and 11 invited presentations.

Workshop on Electronic Paper (EP)

The EP workshop focuses on emerging topics in electronic paper including new applications and user interface studies. Application fields for e-paper are now expanding to books, documents, notes, shelf labels, signage, smart devices and more. Challenging presentations will be given in the following five sessions: 1) Expansion of electrophoretic displays, 2) Emerging e-Paper technologies, 3) Advance of electrochromic displays, 4) Approaches to ideal replacement of paper media, 5) Various challenges for e-paper.

Workshop on MEMS and Emerging Technologies for Future Displays and Devices (MEET)

The MEET workshop is unique in covering all aspects of MEMS, micro-LED, Quantum Dot, nanotechnologies and emerging technologies concerning future displays, imaging devices, and emerging electron devices. The MEET workshop has established the sessions of micro-LEDs and Quantum Dot/Quantum Dot light-emitting diodes for the first time in the world academic society and seeks to broaden the horizon of display and imaging technologies into cutting-edge technologies. Research areas such as materials, basic physics, and fabrication

processes are included. Among all the MEMS, Nanotechnologies and display conferences in the world, this is the only opportunity for MEMS, Nanotechnologies and cutting-edge technology researchers to gather and discuss such devices. Authorities from top research institutions around the world in this field have been invited. Invited speakers will come from CEA-LETI, Ecole Polytechnique, Columbia University, Brunel University, Seoul National University, Kyung Hee University, Fuzhou University, Southern University of Science and Technology, Luminit, Veeco, QMAT, Nanosys, DIC, TCL, and ULVAC. Together with contributed papers with high-quality content, this workshop is aimed at participants who wish to open up new fields in displays, imaging devices, and emerging devices.

Workshop on Display Electronic Systems (DES)

The DES workshop covers all aspects of display electronic systems in relation to video data processing, interface technologies, and cooperative operations between display components such as cells and backlights and sensors. This year, we will have 30 papers including 10 invited talks and 7 poster presentations. This year, we will organize five oral sessions which include a session on 8K technologies and two AUTO STI (Special Topics of Interest) sessions that feature AI and display technologies. Furthermore, sessions on micro-LED and OLED, and unconventional/unique displays will be organized.

Workshop on Flexible Electronics (FLX)

The FLX workshop focuses on advanced technologies for flexible electronics including foldable displays, wearable sensors, and IoT technologies, which are composed of a wide range of fields from material science to practical applications. The sessions cover all aspects of the most topical flexible devices and material technologies including new TFT fabrication technologies, flexible sensors, and innovative Roll-to-Roll processes.

Workshop on Touch Panels and Input Technologies (INP)

Interface technologies such as touch panels and interactive technologies which have already extended to automotive HMIs are the stars of the session. This year, haptic displays/sensors, AR/VR systems, sensing devices for 3D/depth cameras, finger/face authentication devices, in-cell force touch panels, and interactive displays for automotive HMIs are topics that will be focused on. INP papers will open a new window in displays and interactive technologies, not only for devices but also for systems, making them essential viewing.

IDW Best Paper Award and IDW Outstanding Poster Paper Award

IDW will present "IDW Best Paper Award" and "IDW Outstanding Poster Paper Award". The award committee of IDW will select the most outstanding papers from those presented at IDW '18. The award winners will be announced on the IDW website and given a plaque after the conference.

I-DEMO (Innovative Demonstration Session)

I-DEMO will be held on December 13 at Event Hall (1F, Bldg.1). IDW provides the opportunity for an interdisciplinary technical demonstration/discussion in a larger space, more preparation and demonstration time than in the "Author Interviews". Demonstration Award will be awarded to the demonstration that has the biggest impact on the audience.

Exhibition

The IDW '18 Exhibition, which will be held from December 12 through December 14, covers materials, components, manufacturing and measuring equipment, software systems and other related products for display devices. Please join in and enjoy discussions at exhibitors' booths (Event Hall, 1F, Bldg.1).

December 12 (Wed.) 12:40 – 18:00

December 13 (Thu.) 10:00 – 18:00

December 14 (Fri.) 10:00 – 14:00

SID Display Week 2019

May 12 - 17, 2019

San Jose Convention Center

San Jose, California, USA

<http://www.displayweek.org/>

IMID 2018

Aug. 28 – 31, 2018

BEXCO

Busan, Korea

<http://www.imid.or.kr/2018/>

IDW '19

The 26th International Display Workshops

Nov. 27 - 29, 2019

Sapporo Convention Center

Sapporo, Japan

<http://www.idw.or.jp/>

GENERAL INFORMATION

SPONSORSHIP

IDW '18 is sponsored by the Institute of Image Information and Television Engineers (ITE) and the Society for Information Display (SID).

CONFERENCE SITE

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ON-SITE SECRETARIAT

Telephone and fax machines for IDW '18 will be temporarily set up in the secretariat room (Room 437) at Nagoya Congress Center (December 11-14).

RECEPTION

A buffet style reception will be held on the evening of December 12 from 19:00-21:00 at the 1F, North Building in Atsutajingu Kaikan, 1-1-1 Jingu, Atsuta-ku, Nagoya. Atsutajingu Kaikan is located in Atsuta Shrine 2.3km away from the Nagoya Congress Center, approx. 10min. by car. As the number of tickets is limited, you are urged to make an advance reservation through the registration website.

EVENING GET-TOGETHER WITH WINE

A get-together will be held on December 11 from 18:00 to 20:00 at Cafeteria Cascade (B1F) in Nagoya Congress Center. Wine (sponsored by Merck Performance Materials Ltd.) and snacks will be served to participants in a relaxed atmosphere for networking. Admission is free with your name tag.

REGISTRATION

Registration is available in advance and also on-site. However, advance registration is strongly recommended to speed up the arrival procedure at the conference site.

Registration Fees

The registration fee for IDW '18 includes admission to the conference and a USB flash drive of the proceedings. Detailed information will be announced on the website.

	Until Nov. 2	On and After Nov. 3
Individual Member (ITE/SID/ASO*)	¥ 40,000	¥ 50,000
Non-Member**	¥ 50,000	¥ 60,000
Student***	¥ 13,000	¥ 15,000
Life Member of ITE/SID****	¥ 13,000	¥ 15,000
Reception	¥ 8,000	¥ 10,000

*ASO: Academic Supporting Organizations

(See p.16 as well as "Supporting Organizations" at the end of each workshop section.)

**Non-Member: If you intend to join either ITE or SID, the one year membership fee will be subsidized by IDW '18 committee.

***Full-time student, photocopy of student ID is required.

****Photocopy of your membership card is required.

Please note that the payment of reduced registration fee is accepted until Nov. 2. The full fee will be charged for payments made on and after Nov. 3. Also note that the number of reception tickets to register on site is limited.

Additional proceedings (USB flash drive)

At the conference site	¥ 8,000
Airmail after the conference	¥12,000
Domestic mail after the conference	¥10,000

Payment

Two ways are provided for registration.

(1) e-Registration

Access the following URL.

<http://www.idw.or.jp/regist.html>

e-Registration will be accepted until November 30, 2018.

(2) On-site Registration

Conference registration desk will open:

December 11 (Tue.) 17:00 – 20:00

December 12 (Wed.) 8:00 – 18:00

December 13 (Thu.) 8:00 – 18:00

December 14 (Fri.) 8:00 – 13:00

On-site registration fee will be payable by:

1. Cash (JAPANESE YEN only)

2. Credit Card (Visa, MasterCard, JCB, AMEX or China Union Pay)

Bank transfer, bank checks, or personal/traveler's checks are not accepted.

Cancellation Policy

Until **Nov. 2**, cancellation is accepted by writing to IDW '18 Secretariat to obtain refunds for registration and reception. All bank services charges will be deducted from the refunds. Please note that refunds will not be made under the following conditions:

- Cancellations received on and after Nov. 3
- No-shows
- Cancellations by presenters
- Cancellations by visa invitation letter applicants who have already received a visa invitation letter.

However, after IDW '18 closes, a USB flash drive of the proceedings will be sent to the registrants who have paid the registration fees. If it becomes difficult to hold IDW '18 due to the outbreak of infectious diseases and other unavoidable factors, we will substitute the IDW with the mail delivery of the IDW '18 proceedings at a later date to all those who have registered and completed payment.

IDW '18 Tutorial in Japanese

Organized by SID Japan Chapter

Tuesday, Dec. 11, 2018

International Conference Rooms

(3F, Building 3)

Nagoya Congress Center

Detailed information will be announced at

<http://www.sid-japan.org/>

INQUIRIES

IDW '18 Secretariat

c/o Bilingual Group Ltd.

3-3-6 Kudan Minami, Chiyoda-ku, Tokyo 102-0074, Japan

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E-mail: idw@idw.or.jp

Academic Supporting Organizations (ASO)

- The Chemical Society of Japan
- The Electrochemical Society of Japan
- The Illuminating Engineering Institute of Japan
- The Imaging Society of Japan
- Human Interface Society
- Information Processing Society of Japan
- The Institute of Electrical Engineers of Japan
- The Institute of Electronics, Information and Communication Engineers
- The Institute of Image Electronics Engineers of Japan
- International Electrotechnical Commission
- The Japan Ergonomics Society
- The Japan Society of Applied Physics
- The Japanese Liquid Crystal Society
- The Japanese Society for Artificial Intelligence
- The Optical Society of Japan
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- Nagoya Convention & Visitors Bureau

**For final updated information, please visit our website,
<http://www.idw.or.jp/>**

TRAVEL INFORMATION

ACCOMMODATIONS

JTB NAGOYA Branch will handle arrangements for your hotel reservations.

Hotel reservations can be made at the IDW official website.
<http://www.idw.or.jp/accommodation.html>

Hotel list and the rates are available on the Pullout of this Advance Program.

JTB NAGOYA Branch
Office Hours: 9:30-17:30 (Weekdays only)
E-mail: cub_mice@jbn.jtb.jp

There will be an on-site travel information desk during the conference period to handle arrangements for transportations.

VISAS

Visitors from countries / regions whose citizens must have visas should apply to Japanese consular office or diplomatic mission in their respective countries / regions. For further details, please contact your travel agency or the local consular office in your country / region.

Attention: For some countries' / regions' citizens, official documents prepared by the secretariat will be needed. Please ask the secretariat at least two months before the conference.

JAPAN RAIL PASS AND JR-WEST RAIL PASS

Japan Railway (JR) provides the following economical passes. They should be purchased before you leave your country. Please contact your travel agency. Visit the following sites for the details.

(1) The JAPAN RAIL PASS is the most economical way to travel throughout Japan by rail and JR buses.

(2) The JR-WEST RAIL PASS is an economical and flexible rail pass to travel around Western Japan.

Japan Rail Pass: <http://www.japanrailpass.net/en/>

JR-West Rail Pass: <http://www.westjr.co.jp/global/en/ticket/pass/>

CLIMATE

The average temperature in Nagoya during the period is around 11.4°C in the daytime and 2.6°C at night.

NAGOYA

The city of Nagoya is located in the center of Honshu, the main island of Japan, and has good access to Tokyo, Kyoto, Osaka and all other areas. Central Japan International Airport (Centrair) is the gateway of Central Japan to the sky, and is only about 30 min. away from Nagoya station by railway. Nagoya is famous for the birthplace of three notable feudal lords, Oda Nobunaga, Toyotomi Hideyoshi and Tokugawa Ieyasu. They were active persons in the 16th century. There are many heritages such as Nagoya castle, Atsuta Shrine, Tokugawaen, and so on. In Nagoya, traditional industries like ceramics and textiles, and today's key industries like automobiles, aviation, and machine tools have been developed. The local "Nagoya-meshi" such as Hitsumabushi, Misokatsu, Kishimen-Noodle, Misonikomi etc. differ from those of Tokyo and Osaka foods and are the great variety and unmatched originality. The Nagoya Congress Center, with a design motif of a swan poised for flight, is located about 6 km from Nagoya station and is accessible from Nagoya station about 20 minutes by subway and a further 5-minute walk.

PLACES OF INTEREST

Nagoya Castle

This is a castle built in 1612 for the Owari Tokugawa Family. The current donjon was reconstructed in 1959. The 3rd floor through the 5th floor were remodeled in 1997 and were used to exhibit artifacts depicting the lives of the feudal lords and ordinary citizens of Nagoya in those days, as well as telling the story behind the golden Shachihoko. Access: a 5-minute walk from the "Shiyakusho" subway station.

Atsuta Shrine

The Atsuta Shrine is the 2nd largest shrine after the Ise Shrine and about 6.5 million people visit there annually. Shogun Nobunaga prayed for the victory of the war here and the "Nobunaga-bei walls" were made by him in 1560. In the Atsuta Jingu Museum, about 4,000 articles have been collected which were donated by people ranging widely in class from the Imperial Family and Shogun to common persons. Access: a 5-minute walk from Meijo-Line "Jingu-Nishi" station or Meitetsu Nagoya-Line "Jingu-Mae" station.

The Tokugawa Art Museum

The Tokugawa Art Museum is known for its collection of "Daimyo Dogu," the precious treasure of the Owari Tokugawa feudal lords. The collection includes over 10,000 items such as armors and swords belonging to Hideyoshi, Ieyasu and successive feudal lords of the Owari Tokugawa clan. Access: a 10-minute walk from the JR Ozone station.

Toyota Commemorative Museum of Industry and Technology

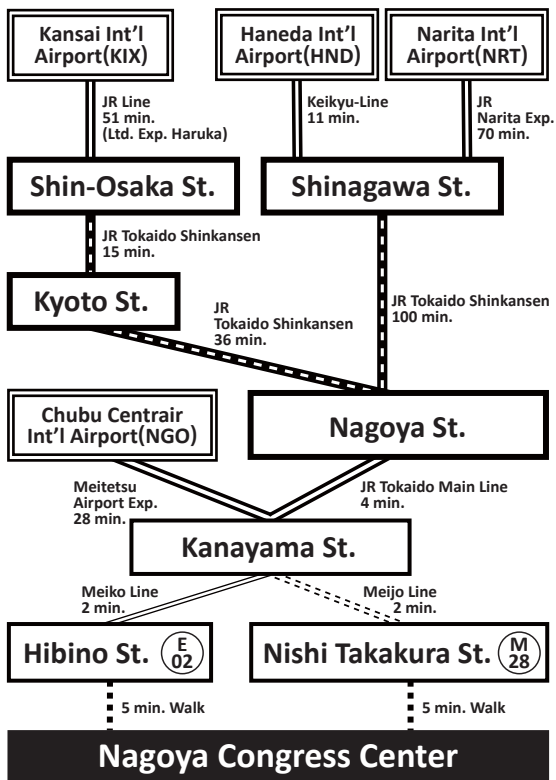
The Toyota Group established this museum to help people understand the importance and wonder of "making things" and the "originality and research" behind it, which have become harder to see as the high technology of industries has evolved in recent years. Access: a 3-minute walk from "Sako" station on the Meitetsu Nagoya-Line.

Please see the following websites for more information.

<http://www.nagoya-info.jp/en/>

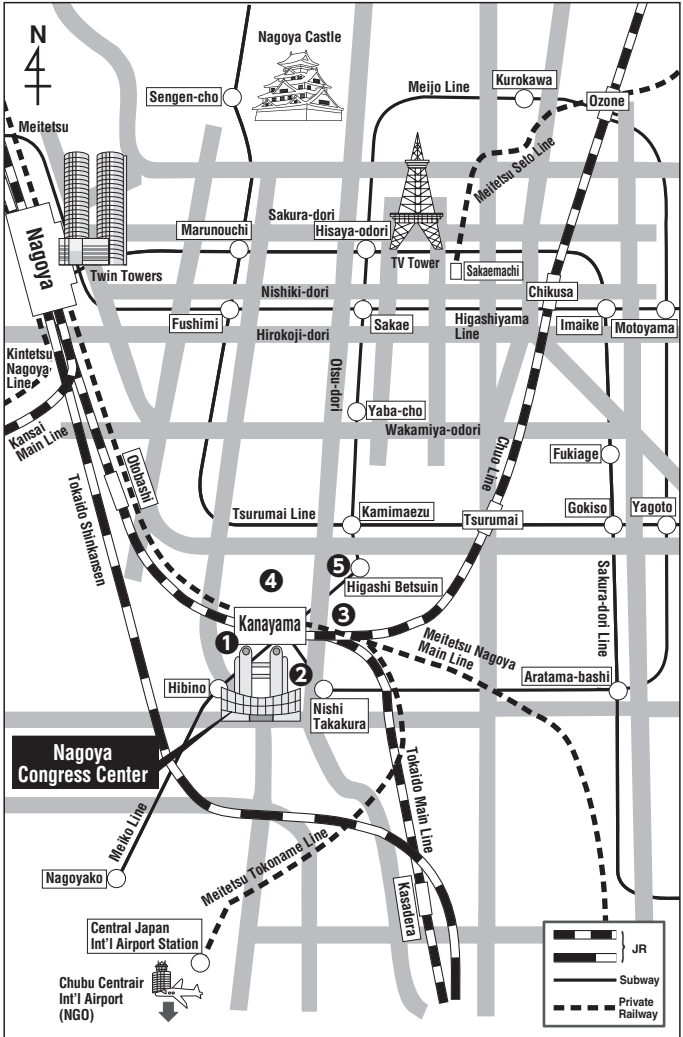
<http://www.nagoya-congress-center.jp/en/>

Access to Conference Site



Transportation information on this program may be changed. Please confirm the details with each airline and railway company. (as of August 8, 2018)

Hotel Map



- | | |
|---|------------------------|
| ① ANA Crowne Plaza Hotel Grand Court Nagoya | Phone: +81-52-683-4111 |
| ② Cypress Garden Hotel | Phone: +81-52-679-1661 |
| ③ Nagoya Kanayama Hotel | Phone: +81-52-322-1111 |
| ④ Meitetsu Inn Nagoya Kanayama | Phone: +81-52-324-3434 |
| ⑤ Hotel Route-Inn Nagoya Higashi Betsuin | Phone: +81-52-339-1101 |

For hotel rates and other information, please see the Accommodations.

Plenary Sessions

Wednesday, December 12

9:30 - 9:50

Shirotori Hall

Opening

Master of Ceremony: Y. Hisatake, Executive Chair, IDW '18

Opening Remarks

9:30

A. Mikami, General Chair, IDW '18
H. Seetzen, President, SID
K. Kawazoe, President, ITE
H. Kumomi, Program Chair, IDW '18

9:50 - 11:50

Shirotori Hall

Keynote Addresses

Chair: H. Kumomi, Program Chair, IDW '18

Co-Chair: A. Mikami, General Chair, IDW '18

Keynote Address - 1

9:50

Human Visual Processing in Driving

K. Okajima
Yokohama Nat. Univ., Japan

Keynote Address - 2

10:30

OLED, Change Your Lifestyle

S. Y. Yoon
LG Display, Korea

Keynote Address - 3

11:10

Touching with Feeling: Integrating Haptics with Touch Display

E. Colgate
Northwestern Univ., USA

Special Topics of Interest on Oxide-Semiconductor TFT

Thursday, December 13

10:40 - 13:10

Event Hall

Poster AMDp1: Oxide TFTs

- AMDp1 - 1 Organic Passivation Layer in Back-Channel-Etch Amorphous InGaZnO Thin Film Transistor with Color Filter on Array Structure for Large Size High Resolution Display Application**
G. T. Li^{,**}, W. Wu^{**}, F. Zhu^{**}, J. J. Liu^{**}, Y. H. Meng^{**}, S. Li^{**}, H. Zhou^{*}*
^{*}Peking Univ., China
^{**}Shenzhen China Star Optoelect. Tech., China
- AMDp1 - 2 Detecting Thickness of Accumulation Layer in a-IGZO Thin Film Transistors by Kelvin Probe Force Microscopy**
X. Shi^{,**}, C. Lu^{*}, D. Geng^{*}, N. Lu^{*}, J. Wang^{*}, L. Li^{*}, M. Liu^{*}*
^{*}Chinese Ac. of Sci., China
^{**}Univ. of Chinese Ac. of Sci., China
- AMDp1 - 3 Highly Stable Self-Aligned Coplanar Bulk Accumulation a-IGZO TFTs Under High Temperature Bias Stress**
H. Kim, S. Lee, J. Lee, J. Jang
Kyung Hee Univ., Korea
- AMDp1 - 4 In-O-N Thin-film Transistors with Superior Stability**
H.-D. Kim, H.-S. Kim
Chungnam Nat. Univ., Korea
- AMDp1 - 5 Comparator for Integrated Readout Circuits with a-IGZO TFTs**
Y. Gong^{,**}, D. Geng^{*}, Y. Su^{*}, X. Shi^{*}, C. Lu^{*}, N. Lu^{*}, L. Li^{*}, M. Liu^{*}*
^{*}Chinese Ac. of Sci., China
^{**}Shandong Univ., China
- AMDp1 - 6 A Study on Degradation Mechanism of Flexible a-InGaZnO Thin Film Transistor Under Repetitive Bending Stress Using Simulation**
K.-L. Han, H.-J. Jeong, B.-S. Kim, S. Oh, J.-S. Park
Hanyang Univ., Korea

- AMDp1 - 7 a-IGZO TFT Gate Driver Circuit for Suppressing Ripple Voltage without Pull-Down Unit**
C. Y. Park, K.-H. Lee^{}, E. S. Ha^{*}, Y.-S. Kim*
Sungkyunkwan Univ., Korea
^{}Gyeonggi Sci. High School, Korea*
- AMDp1 - 8 High Performance In-Ga-Zn-O Thin-Film Transistors via Microwave and Electron-Beam Radiation at Room Temperature**
S.-C. Jang, H.-D. Kim, H.-S. Kim
Chungnam Nat. Univ., Korea
- AMDp1 - 9 Low-Temperature Processed IGTO Thin-Film Transistors with High Mobility by Reducing Deposition Pressure**
H.-A. Kim, J. O. Kim, J. S. Hur, J. K. Jeong
Hanyang Univ., Korea
- AMDp1 - 10 IGZO TFT Gate Driver Circuit Capable of Compensating Threshold Voltage Shift for Pull-Down Unit**
J. Oh, J.-H. Kim, K.-H. Lee^{}, E. S. Ha^{*}, K. C. Park^{**}, J.-H. Jeon^{***}, Y.-S. Kim*
Sungkyunkwan Univ., Korea
^{}Gyeonggi Sci. High School, Korea*
*^{**}Konkuk Univ., Korea*
*^{***}Korea Aerospace Univ., Korea*
- AMDp1 - 11 Double-Layered Indium-Zinc-Oxide Thin Film Transistors with an Addition of Hydrogen Peroxide**
W. Jeon, B. Choi
Sungkyunkwan Univ., Korea
- AMDp1 - 12 Effects of Magnetic Field Shielded Sputtering Process on the Properties of IGZO TFT**
Y. Yang, D. Lee, S. Kim, M. Hong
Korea Univ., Korea

Late-News Papers

Due Oct. 1, 2018

Submit two to four-page camera-ready manuscript
via IDW website:

<http://www.idw.or.jp/latenews.html>

Friday, December 14

10:40 - 11:50

Reception Hall 1

AMD6: Oxide TFT: Device

Chair: J. Kim, Tokyo Tech, Japan
 Co-Chair: K. Takatori, Huawei Techs. Japan, Japan

AMD6 - 1 Invited Spreading Currents in Oxide TFTs

10:40

S. Lee, J. Jang
Kyung Hee Univ., Korea

AMD6 - 2 Invited Top-Gate Oxide TFT Technologies for Advanced LCDs

11:05

I. Suzumura, Y. Yamaguchi, H. Kawanago
Japan Display, Japan

AMD6 - 3 Oxide Semiconductor Based Vertical TFT for Ultra High-Resolution Backplane Technology

11:30

*K.-H. Lee, S. Lee, H.-I. Yeom, J.-B. Ko, C.-S. Hwang**,
S.-H. K. Park
KAIST, Korea
**ETRI, Korea*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:35

Reception Hall 1

AMD7: Oxide TFT: Stability and Fundamental (1)

Chair: I. Suzumura, Japan Display, Japan
 Co-Chair: H. Kumomi, Tokyo Tech, Japan

AMD7 - 1 Invited Electronic Structure and Defects in Amorphous Oxide Semiconductor: A Comprehensive Review

13:10

T. Kamiya, H. Kumomi, H. Hosono
Tokyo Tech, Japan

AMD7 - 2 Enhancing Reliability of Amorphous In-Ga-Zn-O Thin Film Transistors by Nitrogen Doping

13:35

T. Sung, K. Park, J. H. Kim, H.-W. Park**, P. Yun***, J. Noh***, S. W. Lee***, K.-S. Park***, S. Y. Yoon***, I. B. Kang***, K.-B. Chung**, H.-S. Kim*, J.-Y. Kwon*
Yonsei Univ., Korea
**Chungnam Nat. Univ., Korea*
***Dongguk Univ., Korea*
****LG Display, Korea*

- AMD7 - 3** **Simulation Study of Self-Heating Effects**
13:55 **on Amorphous Oxide Semiconductor TFTs:**
Channel-Length Dependence
K. Abe, M. Fujinaga, T. Kuwagaki
Silvaco Japan, Japan
- AMD7 - 4** **A 31-in. 4K2K AMOLED Display Using High Mobility**
14:15 **and Reliability Top-Gate Self-Align IGZO TFTs**
with Cu Electrode
*Z.-S. Liu^{**}, S.-N. Zhao^{**}, Y.-J. Hsu^{**}, J.-S. Im^{**},*
*Y.-C. Wu^{**}, P.-Y. Lu^{**}*
^{*}*Nat. Eng. Lab. for AMOLED Process Tech., China*
^{**}*Shenzhen China Star Optoelect. Semiconductor*
Display Tech., China

----- Break -----

14:50 - 15:55

Reception Hall 1

AMD8: Oxide TFT: Stability and Fundamental (2)

Chair: T. Kamiya, Tokyo Tech, Japan

Co-Chair: S. Horita, JAIST, Japan

- AMD8 - 1** ***Invited* Highly Stable High Mobility Oxide TFT**
14:50 *J. B. Ko, S.-H. Lee, K. W. Park, S.-H. K. Park*
KAIST, Korea
- AMD8 - 2** **Improvement of the Stability Under High Voltage and**
15:15 **High Temperature Stress by Using Nitrogen Doped**
IGZO TFTs
I.-T. Cho, J. Noh, P. Yun, J. Jang, D. Lee, J.-H. Baeck,
S.-W. Lee, K.-S. Park, S. Y. Yoon, J.-Y. Kwon^{}, I. Kang*
LG Display, Korea
^{*}*Yonsei Univ., Korea*
- AMD8 - 3** **Development of Tunneling Contact a-IGZO TFT with**
15:35 **Graphene Interlayer**
L. Wang, L. Zhang^{}, Z. Zhu, H. Zhu*
Visionox Tech., China
^{*}*Shenzhen Univ., China*

Author Interviews

16:20 – 16:50

Special Topics of Interest on Quantum Dot Technologies

Thursday, December 13

10:40 - 13:10

Event Hall

Poster PHP1: QD Phosphors and Devices

- PHP1 - 1** **Status and Trends of Patenting Activity for Electroluminescent Quantum Dots**
P. Mukish, Z. Bouhamri, E. Virey
Yole Développement, France
- PHP1 - 2** **Thermal Stability of CsPbBr₃ Quantum Dots and Their Application to Light-Emitting Diodes**
H. Sasaki, N. Kamata, Z. Honda
Saitama Univ., Japan
- PHP1 - 3** **Enhancement of Optical and Electrical Properties of Methyl Ammonium Lead Bromide Perovskite Quantum Dot with Thiol Ligand Exchange**
H. Cho, H. Zou, S. Park, D. Y. Jeon
KAIST, Korea
- PHP1 - 4** **Quantum Dots Emissive Layer in QD-LED by Chemical Bonding with Electron Transport Layer**
H. Shin, H. Cho, W. Choi, D. Y. Jeon
KAIST, Korea

10:40 - 13:10

Event Hall

Poster OLEDp2: OLED/QDT Poster

- OLEDp2 - 1** **Efficiency Improvement of Quantum Dot Light Emitting Diode by Using DMSO Treated PEDOT: PSS**
T. J. Bae, S. H. Song, S. J. Park, S. S. Kim, J. K. Song
Sungkyunkwan Univ., Korea
- OLEDp2 - 2** **Organic Electron Transport Layer for High Performance Green Inverted Quantum Dot Light Emitting Diodes**
C. Y. Lee, H. W. Bae, K. J. Eun, N. N. Mude, J. H. Kwon
Kyung Hee Univ., Korea

10:40 - 13:10

Event Hall

Poster MEETp1: Quantum Dots and Nanotechnologies**MEETp1 - 1 Enhancement of Optical Emission from Quantum Dots by Photonic Crystal Cavities Fabricated on SOI Substrates***T. Matsutomi, T. Hayashi, K. Tanaka, K. Yasui**Nagaoka Univ. of Tech., Japan***MEETp1 - 2 High Efficiency Green Cd-Free Quantum Dot Light-Emitting Diodes with Cross-Linked Hole Transport Layer***K. J. Eun, M. N. Naik, C. Y. Lee, J. H. Kwon**Kyung Hee Univ., Korea***Friday, December 14**

9:00 - 10:20

Room 432

OLED5: OLED Device Technology

Chair: T. Wakimoto, Merck PM, Japan

Co-Chair: T. Shimizu, NHK, Japan

OLED5 - 1 *Invited* Monochromatic LEDs Based on Perovskite Quantum Dots: Opportunities and Challenges

9:00

*C.-J. Shih, S. Kumar, J. Jagielski**ETH Zurich, Switzerland***OLED5 - 2 Negative Capacitance as a Diagnostic Tool for Recombination in Purple Quantum Dot LEDs**

9:20

C. Blauth^{,**}, T. Hirai^{**}, P. Mulvaney^{*}**^{*}Univ. of Melbourne, Australia**^{**}CSIRO Manufacturing, Australia***OLED5 - 3 Dual Cation Perovskite Light Emitting Diode with Multi-Stacking Layers**

9:40

*W. C. Choi, A. Kanwat, J. Jang**Kyung Hee Univ., Korea***OLED5 - 4 High-Performance, Solution-Processed Quantum Dots Hybrid Light-Emitting Field-Effect Transistors**

10:00

*P. He, L. Lan, J. Peng**South China Univ. of Tech., China*

----- Break -----

10:40 - 12:00

Room 432

PH2/OLED6: QD Phosphors and Devices

Chair: R.-J.Xie, Xiamen Univ., China
 Co-Chair: Y. Sakai, Mitsubishi Chem., Japan

PH2/OLED6 - 1 *Invited* **Narrow Band-Edge Emission from AgInS₂ Semiconductor Quantum Dots by the Formation of Amorphous III-VI Semiconductor Shells**
 10:40

T. Uematsu

Osaka Univ., Japan

PH2/OLED6 - 2 **Novel Ligand Materials to Enhance Luminous Efficiency and Stability of Perovskite Quantum Dot**
 11:00

S.-Y. Cheng, C.-T. Chiu, J.-T. Lian, B.-K. Hsu, T.-Y. Lin**

Chunghwa Picture Tubes, Taiwan

**Nat. Taiwan Ocean Univ., Taiwan*

PH2/OLED6 - 3 **Highly Stable CsPbI₃ Perovskite QDs for Light-Emitting Diodes**
 11:20

Y. Cai, Y. Li, R.-J. Xie

Xiamen Univ., China

PH2/OLED6 - 4 **Alkali Metal Carbonate Doped Metal Oxide Electron Transporting Layer for Highly Efficient Quantum-Dot Light Emitting Diodes**
 11:40

Y. Lee, H.-M. Kim, J. Kim, J. Jang

Kyung Hee Univ., Korea

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

International Conference Room

MEET4: EL Quantum Dots Technologies

Chair: F. Yan, Fuzhou Univ., China
 Co-Chair: Z. Liu, Southern Univ. of S&T, China

MEET4 - 1 *Invited* **Solution Processed Charge Generation Junctions for Highly Efficient Quantum-Dot Light Emitting Diodes**
 13:10

J. Jang, H.-M. Kim, J. Kim

Kyung Hee Univ., Korea

MEET4 - 2 *Invited* **Efficient Inverted Quantum Dot Light-Emitting Diodes Fabricated by Inkjet Printing Technique**
 13:30

C. Lee

Seoul Nat. Univ., Korea

MEET4 - 3 Invited The Color Revolution: Towards Ultra-Wide Color Gamut

13:50

*X. W. Sun**Southern Univ. of S&T, China***MEET4 - 4 Invited Highly Saturated Color Quantum-Dot LEDs**

14:10

*P. Kathirgamanathan**Brunel Univ. London, UK*

----- Break -----

14:50 - 15:50

International Conference Room

MEET5: Emerging Quantum Dots and Nanotechnologies

Chair: I. Kymissis, Columbia Univ., USA

Co-Chair: X. W. Sun, Southern Univ. of S&T, China

MEET5 - 1 Invited Cadmium-Free Quantum Dot Inkjet Inks for Color Conversion Devices

14:50

E. Lee, R. Tangirala, C. Hotz, H. Kim, T. Miki, E. Otsuki*, S. Yoshihara*, T. Kizaki*, A. Ishizuka*, I. Kiyoto***Nanosys, USA***DIC, Japan***MEET5 - 2 Invited Tailoring Quantum Dot Structure for Enhanced Device Lifetime of Quantum-Dot Light-Emitting Diodes (QLEDs)**

15:10

*Y. Yang, W. Cao, C. Xiang, L. Wu, L. Qian, X. Yan**TCL Corporate Res., China***MEET5 - 3 Invited Synthesis and Optical Properties of Colloidal InN Quantum Dots**

15:30

*J. Nagakubo, M. Hirakawa, T. Nishihashi, H. Murakami**ULVAC, Japan***Author Interviews**

16:20 – 16:50

Final Program

The final program of IDW '18 will be available on the website (<http://www.idw.or.jp/>) from the middle of November

Special Topics of Interest on AR/VR and Hyper Reality

Wednesday, December 12

15:00 - 16:20

Room 222

3D1: Display Systems for AR

Chair: S. Yano, Shimane Univ., Japan

Co-Chair: D. Mikami, NTT, Japan

3D1 - 1 *Invited* The Optimization of a Light-Field Holographic Projection System

15:00

C.-Y. Chen, C.-H. Chuang*

Nat. Taiwan Univ. of S&T, Taiwan

*Nat. Taiwan Univ., Taiwan

3D1 - 2 Large-Size and See-Through Color Light Field Display Using Projector and DDHOE

15:20

J. B. Jessie, L. Jorissen*, R. Oi, K. Wakunami, Y. Ichihashi, M. Okui, K. Yamamoto

NICT, Japan

*Hasselt Univ., Belgium

3D1 - 3 Geometric Phase Doublet Lens for Augmented Reality

15:40

C.-K. Lee, W. Seo, G. Sung, S. Kim, B. Shin, Y.-T. Kim,

J. Seo, J.-S. Chung, J. An, H. Song, Y. Kim, H. Kim,

C.-S. Choi, Y. Kim, K. Won, S.-H. Lee, M. Jeon, H.-S. Lee,

D. Lee

Samsung Elect., Korea

3D1 - 4 A Simulation Platform to Convert Viewing Geometry of a Transparent Display for AR Applications

16:00

Y.-M. Chen, P.-L. Sun, C.-J. Li*, H.-Y. Chen*

Nat. Taiwan Univ. of S&T, Taiwan

*ITRI, Taiwan

----- Break -----

Author Interviews

18:10 – 18:40

15:05 - 16:25

Room 131

PRJ1/FMC2: Waveguide for AR-Near Eye Display

Chair: D. Cuypers, CMST, Belgium

Co-Chair: K. Kälántár, Global Optical Solutions, Japan

**PRJ1/
FMC2 - 1
15:05** *Invited* **A Plastic Holographic Waveguide Combiner for Light-Weight and Highly-Transparent Augmented Reality Glasses***T. Yoshida, K. Tokuyama, Y. Takai, D. Tsukuda, T. Kaneko, N. Suzuki, T. Anzai*, A. Yoshikaie, K. Akutsu, A. Machida**Sony, Japan***Sony Global Manufacturing & Operations, Japan***PRJ1/
FMC2 - 2
15:25** **Waveguide-HOE-Based Camera That Captures a Frontal Image for Flat-Panel Display***H. Konno*, S. Igarashi*, T. Nakamura**, M. Yamaguchi****Tokyo Tech, Japan****JST PRESTO, Japan***PRJ1/
FMC2 - 3
15:45** **Novel Holographic Waveguide Display with Kepler Telescope Configuration***Z. Shen, Y. Zhang, A. Liu, Y. Weng, X. Zhu, X. Li**Southeast Univ., China***PRJ1/
FMC2 - 4
16:05** **Light Efficiency Modeling for a Holographic Waveguide Display***X. Zhu, Y. Zhang, Z. Shen, A. Liu, Y. Weng**Southeast Univ., China*

----- Break -----

Author Interviews

18:10 – 18:40

16:40 - 18:00

Room 222

3D2/DES1: Novel Display Systems

Chair: C.-Y. Chen, Nat. Taiwan Univ. of S&T, Taiwan

Co-Chair: Y. Oyamada, Tottori Univ., Japan

**3D2/
DES1 - 1
16:40** *Invited* **Hidden Stereo: Synthesizing Ghost-Free Stereoscopic Images for Viewers without 3D Glasses***T. Fukiage, T. Kawabe, S. Nishida**NTT, Japan***3D2/
DES1 - 2
17:00** *Invited* **Extended Imagery Training for Baseball Batting through High-Reality Virtual Space Using Head Mounted Display***D. Mikami**NTT, Japan*

3D2/ DES1 - 3 **Invited An Interactive Fog Display to Express Adaptive Shape-Changing Flow**

17:20

T. Koga, K. Otao^{*}*Nat. Inst. of Tech., Tokuyama College, Japan*^{*}*Univ. of Tsukuba, Japan*

3D2/ DES1 - 4 **A Miniaturized Multi-Layered Display System with Water Drops**

17:40

Y.-A. Kuo, Z.-W. Wang, H.-W. Chen, W.-C. Hsu^{*}, C.-Y. Chen*Nat. Taiwan Univ. of S&T, Taiwan*^{*}*Bruvis Multi Media Creative, Taiwan***Author Interviews**

18:10 – 18:40

Thursday, December 13

9:00 - 10:15

Room 224

INP4: AR and Interactive Systems

Chair: T. Komuro, Saitama Univ., Japan

Co-Chair: Y. Ban, Univ. of Tokyo, Japan

INP4 - 1 **Invited High Precision and High Sensitivity Sheet Sensor by Printing Technology**

9:00

T. Miyoshi^{*}, H. Kondoh^{*}, S. Nishi^{*}, T. Kamata^{*,**}^{*}*JAPER, Japan*^{**}*AIST, Japan*

INP4 - 2 **Invited Illusion Based Shape Display Using the Visuo-Haptic Interaction**

9:25

Y. Ban

Univ. of Tokyo, Japan

INP4 - 3 **Invited 3D User Interfaces Based on AR/VR**

9:50

T. Komuro

Saitama Univ., Japan

----- Break -----

Author Interviews

10:40 – 11:10

----- Lunch -----

14:20 - 16:50

Event Hall

Poster FM Cp1: Display Optics (1)**FM Cp1 - 1 LED Authentication Using a Smartphone for Volume Holograms***T. Yasuda, Y. Yoshimura, T. Yamauchi**Dai Nippon Printing, Japan*

14:20 - 16:50

Event Hall

Poster 3Dp2: Projection Display Systems**3Dp2 - 1 Development of 35-in. Tabletop Display with Wide Viewing Angle Using Projection-Based Light Field Display Technology***H. Shim, W. Jang, D. Lee, J. Park, S. Yoon**Korea Photonics Tech. Inst., Korea***3Dp2 - 2 Realization of an Augmented Reality Display Operated with a Tunable Liquid Lens and 3D Integral Imaging***P.-K. Sung, C.-W. Chien, C.-Y. Chien, C.-R. Sheu**Nat. Cheng Kung Univ., Taiwan***3Dp2 - 3 Forming Aerial Omnidirectional Transparent Information Screen***E. Abe^{*}, H. Yamamoto^{*,**}**^{*}Utsunomiya Univ., Japan**^{**}JST ACCEL, Japan***3Dp2 - 4 A Waveguide See-Through Display System Based on a Holographic Lens***S.-K. Zhou^{*,**}, W.-K. Lin^{*,**}, B.-S. Lin^{*}, W.-C. Su^{**}**^{*}Nat. Chiao Tung Univ., Taiwan**^{**}Nat. Changhua Univ. of Education, Taiwan***SID Display Week 2019**

May 12 - 17, 2019

San Jose Convention Center

San Jose, California, USA

<http://www.displayweek.org/>

14:20 - 16:50

Event Hall

**Poster VHFp6/3Dp3: Applied Vision and Human Factors
- Human Factors of AR/VR**

VHFp6/
3Dp3 - 1

**Study on Subjective Depth Evaluation for
Holographic Head-Mounted Display**

*H. Kubo, Y. Oguro, Y. Sakamoto
Hokkaido Univ., Japan*

VHFp6/
3Dp3 - 2

**Study on Correction of Field Curvature in Head-
Mounted Display Using Electro-Holography**

*Y. Oguro, H. Kubo, Y. Sakamoto
Hokkaido Univ., Japan*

Friday, December 14

9:00 - 10:20

Room 224

PRJ4: Wearable

Chair: S. Ouchi, Hitachi, Japan
Co-Chair: T. Suzuki, JVC Kenwood, Japan

PRJ4 - 1
9:00

**Can We Overcome the Challenges on the Path to
Consumer Adoption of AR Headsets?**

*Z. Bouhamri, E. Virey, P. Mukish
Yole Développement, France*

PRJ4 - 2
9:20

***Invited* Wide-Range Dimming Device on a Plastic
Substrate for Augmented Reality Glasses**

*T. Kono, A. Machida, K. Kadono, Y. Ishii, H. Takanashi,
A. Nishiike, H. Suzuki*, Y. Nakagawa*, K. Ando*,
D. Kasahara*, A. Takeda*, K. Nomoto
Sony, Japan
Sony Global Manufacturing & Operations, Japan

PRJ4 - 3
9:40

Fiber Scanning Technology for Projection Unit

*S. Onoe, T. Matsuda, T. Nakamura, Y. Seo, S. Ouchi
Hitachi, Japan*

PRJ4 - 4
10:00

**Full-Color Waveguide-Coupling Near-Eye Displays
Using Chromatic Polarization Volume Gratings**

*Y. Weng, J. Cui, X. Li, Y. Zhang
Southeast Univ., China*

----- Break -----

Author Interviews

12:00 – 12:30

10:40 - 12:05

Room 222

VHF6: Virtual Reality

Chair: T. Shibata, Tokyo Univ. of Social Welfare, Japan

Co-Chair: S. Uehara, AGC, Japan

VHF6 - 1 10:40 *Invited* Ergonomic Evaluations of Virtual Reality System and Content*T. Kawai**Waseda Univ., Japan***VHF6 - 2 11:05 Comparison of Color Perception Between Head-Mounted Display and Ordinary Display***T. Nishimura, S. Dozaki, K. Hirai, T. Horiuchi**Chiba Univ., Japan***VHF6 - 3 11:25 2.02-in. Mini-LEDs Wide Color Gamut Solution for Virtual Reality Display***H.-H. Wu, S. C. Kuo, I.-H. Hsieh, A. Chen**AU Optronics, Taiwan***VHF6 - 4 11:45 Design of Machine Vision Aided Measurement System for Near-Eye Display Devices***S. Hu, Q. Zhu, Y. Cao, Y. Tang, Y. Zheng**Southeast Univ., China***Author Interviews**

12:05 – 12:30

----- Lunch -----

**I-DEMO
(Innovative Demonstration Session)**Live demonstrations
of emerging information display technologies
by oral and poster presenters

Thursday, Dec. 13, 2018

10:40 – 16:50

Event Hall (1F, Building 1)
Nagoya Congress Center

Special Topics of Interest on Automotive Displays

Wednesday, December 12

15:00 - 16:15

Room 224

INP2: 3D Sensing for Automotive HMI

Chair: R. Ishiyama, NEC, Japan
Co-Chair: N. Mishima, Toshiba, Japan

INP2 - 1 *Invited* **Depth from Asymmetric Defocus Using
15:00** **Color-Filtered Aperture Towards One Shot Depth
Acquisition by Single Camera**

*N. Mishima, T. Sasaki
Toshiba, Japan*

INP2 - 2 *Invited* **Hybrid Time-of-Flight Range Image Sensors
15:25** **Using High-Speed Multiple-Tap Charge Modulation
Pixels**

S. Kawahito^{,**}, K. Yasutomi^{*}, K. Mars^{*}, K. Kagawa^{*},
S. Aoyama^{**}
^{*}Shizuoka Univ., Japan
^{**}Brookman Tech., Japan*

INP2 - 3 *Invited* **3-D Scan and Image Recognition of Face**

15:50 *R. Ishiyama
NEC, Japan*

----- Break -----

16:40 - 18:15

Room 224

INP3: In-Cell Touch Panels and Automotive HMI

Chair: H. Haga, Tianma Japan, Japan
Co-Chair: N. Takada, Japan Display, Japan

INP3 - 1 *Invited* **Capacitive Touch Panel with Non-Conductive
16:40** **and Conductive Object Distinction for In-Cell LCD
and OLED**

*J. D. D. B. Mugiraneza, T. Maruyama, K. Kida,
S. Yamagishi, T. Yamamoto, Y. Sugita, H. Fukushima,
H. Kawamori
Sharp, Japan*

- INP3 - 2** **Invited Large Size In-Cell Capacitive Touch Panel and Force Touch Development for Automotive**
 17:05
N. Takada, Y. Kakinoki, T. Tanaka, C. Tanaka, Y. Teranishi, T. Nakanishi, N. Goto
Japan Display, Japan
- INP3 - 3** **Invited "In-Cell" Force Touch Technology in the OLED Display Panel**
 17:30
L. Liu, F. Lu, S. Ma, C. Ma, Q. Yao
Tianma Micro-Elect., China
- INP3 - 4** **Knob on Display: Movable Ring-Shaped Dial Interaction for Automotive Center Display**
 17:55
Y. Sasaki
Mitsubishi Elec., Japan

Author Interviews

18:15 – 18:40

Thursday, December 13**9:00 - 10:25****Room 432****VHF4: Ergonomics for Automotive Applications**

Chair: Y. Imai, Mitsubishi Elec., Japan
 Co-Chair: Y. Endo, AGC, Japan

- VHF4 - 1** **Invited Visual Cues with HUD: Driving Behavior Analysis of Elderly and Experienced Drivers in Hazard Anticipation Scenes**
 9:00

Y. Saito^{}, A. Yamasaki^{*}, S. Inoue^{**}, T. Ito^{***}, H. Inoue^{****}, P. Raksincharoensak^{*}*

^{}Tokyo Univ. of A&T, Japan*

*^{**}Toyota Motor, Japan*

*^{***}Univ. of Tokyo, Japan,*

*^{****}Kanagawa Inst. of Tech., Japan*

- VHF4 - 2** **Advanced Optical Characterization Techniques and Simulation of Anti-Glare Cover Glass**
 9:25

T. Saitoh, T. Kanai

Nippon Elec. Glass, Japan

- VHF4 - 3** **Sparkle Measurement of Anti-Glare Displays with Simulating Human-Eye Perception**
 9:45

M. Kurashige, G. Furui, K. Ishida, H. Suzuki,

M. Tsunekawa, Y. Iwata, N. Nakamura

Dai Nippon Printing, Japan

VHF4 - 4 **Automotive Displays and HMI: Past, Present and Future**
10:05

P. M. Knoll

Karlsruhe Inst. of Tech., Germany

Author Interviews

10:40 – 11:10

----- Lunch -----

14:20 - 16:50

Event Hall

**Poster VHFp3: Applied Vision and Human Factors
 - Automotive Applications**

VHFp3 - 1 **Layer-Wise Analysis of TFT-LCD Reflectivity**

L. Xulin, Y. Chunqiu, L. Chen

Shenzhen China Star Optoelect. Tech., China

VHFp3 - 2 **An Automotive Display with Multi Domains and
 Changing Viewing Angle Functions**

Y. W. Chang, Y. E. Wu

AU Optronics, Taiwan

14:20 - 16:50

Event Hall

**Poster DESp2: Display Electronic Systems for
 Automotive**

DESp2 - 1 **Image Processing Approach for Traffic Light Control
 Based on Traffic Area**

*R. Fernando, A. Jayasiri**

Univ. of Kelaniya, Sri Lanka

**Univ. of the Visual & Performing Arts, Sri Lanka*

17:10 - 17:55

Room 224

INP5: Fingerprint Sensors and Secure Devices

Chair: D. Suzuki, Japan Display, Japan

Co-Chair: K. Yamazaki, Corning Japan, Japan

INP5 - 1 **Invited Glass-Based Capacitive Fingerprint Sensor
 Package**
17:10

D. Suzuki, T. Uehara, Y. Suzuki, F. Nakano, Y. Ozeki,

H. Miyake

Japan Display, Japan

INP5 - 2 **Near Filed Communication (NFC) Antenna on Display Integrated on Touch In-Cell (TIC) Panel**
17:35

C.-J. Liu, J. Liao, C.-Y. Hsu, H.-H. Chen, H.-M. Su, W.-T. Tseng

Chunghwa Picture Tubes, Taiwan

Author Interviews

18:40 – 19:10

Friday, December 14

9:00 - 10:20

Room 133

DES2/UXC4: AI Applied to Display

Chair: T. Sato, AIST, Japan

Co-Chair: Y. Ando, Fuji Xerox, Japan

DES2/ **Invited 3D Image Processing Based on Machine**
UXC4 - 1 **Learning**

9:00

T. Fujii

Nagoya Univ., Japan

DES2/ **Invited Road Scene Understanding Using Image**
UXC4 - 2 **Recognition for Safety and Autonomous Driving**

9:20

T. Watanabe

Toshiba, Japan

DES2/ **Invited Font Style Transfer Using Deep Neural**
UXC4 - 3 **Networks**

9:40

W. Shimoda, A. Narusawa, K. Yanai

Univ. of Electro-Commun., Japan

DES2/ **TalkingDraw: Support Drawing Diagrams in Talking**
UXC4 - 4 **with Voice and Pen**

10:00

X. Xu, H. Shibata

Fuji Xerox, Japan

----- Break -----

10:40 - 11:40

Room 224

PRJ5: Automotive Displays and Sensors

Chair: K. Ohara, Marubun, Japan

Co-Chair: M. Kuwata, Mitsubishi Elec., Japan

PRJ5 - 1 **Invited Use of Aerial Agent for Smart Cockpit**

10:40

M. Morita, H. Yamamoto, K. Yoshihara, N. Nara*

Clarion, Japan

**Utsunomiya Univ., Japan*

PRJ5 - 2 **Improving Image Quality of Lensless Light-Field Imaging Using Pattern Projection Technique**
11:00

Y. Nakamura, K. Yamaguchi, K. Tajima, T. Shimano
Hitachi, Japan

PRJ5 - 3 **Optimization of Vertical View Human Skeleton Recognition from Range Images**
11:20

A. Watanabe, T. Kamimura
Hitachi, Japan

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

Room 222

3D5/DES4: Display Systems for Automotive

Chair: K. Morita, Chuo Univ., Japan

Co-Chair: H. Yamamoto, Utsunomiya Univ., Japan

3D5/ **Invited Super Multi-View 3D Head-Up Display**
DES4 - 1

13:10 *Y. Takaki*

Tokyo Univ. of A&T, Japan

3D5/ **Low Crosstalk Glassless 3D HUD with Expanded Viewing Area in All Directions Using Novel Eye Tracking System**
DES4 - 2
13:30

T. Matsumoto, K. Kusafuka, H. Nakamura, G. Hamagishi*, K. Yoshimoto*, H. Takahashi**

Kyocera, Japan

**Osaka City Univ., Japan*

3D5/ **10.4-in. Ultra-Slim a-Si TFT LCD with Tracking Gate Line in Pixel Technology for Automotive Display**
DES4 - 3

13:50 *C.-H. Kuan, J.-S. Liao, C.-Y. Du, C.-C. Chang, H.-H. Chen, H.-M. Su, W.-Z. Zeng*

Chunghwa Picture Tubes, Taiwan

3D5/ **An Automotive Grade Local Dimming Display System**
DES4 - 4

14:10 *W.-F. Chang, C.-L. Li, F.-H. Tsao, H.-H. Chen, H.-M. Su, W.-T. Tseng, S.-H. Yang, Y. Zhang*

Chunghwa Picture Tubes, Taiwan

Author Interviews

16:20 – 16:50

Special Topics of Interest on Wide Color Gamut and Color Reproduction

Thursday, December 13

14:20 - 16:50

Event Hall

Poster FMCp5: WCG Color Filter

**FMCp5 - 1 Wide Gamut Display Using Red Color Filter-
Technical Developments and Actual Products**

D. Lee, S. J. Yang, J. Y. Lee, Y. W. Kim, H. J. Kim

LG Chem., Korea

14:20 - 16:50

Event Hall

**Poster VHFp2: Applied Vision and Human Factors
- Color Gamut Metrology**

**VHFp2 - 1 Analysis of Color Gamuts and Tone Characteristics
of Tablet Display Under Different Ambient Light
Levels**

T.-Y. Chiang, H.-S. Chen

Nat. Taiwan Univ. of S&T, Taiwan

Friday, December 14

10:40 - 11:40

Room 131

LCT6: Wide Color Gamut LCDs

Chair: S. Shibahara, Sony Visual Products, Japan

Co-Chair: S. Kawasaki, JNC Korea, Korea

**LCT6 - 1 Invited History of Wide Color Gamut (WCG)
10:40 Technology in Display**

*M. S. Kwak, Y. H. Kim, S. H. Han, A. K. Kim, S. I. Kim,
M. Jun, I. B. Kang*

LG Display, Korea

**LCT6 - 2 Invited Sunlight Readable FFS LCD with High
11:00 Contrast Ratio and Wide Color Gamut Under High
Ambient Light Situations**

*Y. Kawahira, K. Murata, T. Nakai, M. Hasegawa, A. Sakai,
K. Minoura, N. Smith**

Sharp, Japan

**Sharp Labs. of Europe, UK*

**LCT6 - 3 Analyzing and Improving the Bluish Issue at VA
11:20 Dark State**

*C. Chen, Y. Wang, Y. Lin, B. Hai, Y. Hsiao
Shenzhen China Star Optoelect. Tech., China*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:40

Room 432

VHF7: Color Gamut Metrology

Chair: K. Masaoka, NHK, Japan
Co-Chair: K. Hirai, Chiba Univ., Japan

**VHF7 - 1 Invited Visual Evaluation of Display Color Gamut
13:10**

*Y. Kwak, Y. S. Baek
Ulsan Nat. Inst. of S&T, Korea*

**VHF7 - 2 Invited Simulation and Verification for Color Volume
13:35 of HDR WCG Display**

F. Jiang, K. Masaoka, M. Fairchild
Rochester Inst. of Tech., USA
NHK, Japan

**VHF7 - 3 Fast and Accurate Colour Gamut Volume
14:00 Measurements of RGB Displays with Degenerate
Colours**

*J. Bergquist
Consult., Japan*

**VHF7 - 4 A Color Quality Volume Metric for HDR Displays
14:20**

*W. Lv, H. Xu, Z. Ye, J. Qiu
Zhejiang Univ., China*

----- Break -----

14:50 - 15:55

Room 432

VHF8: Color Vision

Chair: K. Masaoka, NHK, Japan
Co-Chair: Y. Kwak, Ulsan Nat. Inst. of S&T, Korea

**VHF8 - 1 Invited Applicability of CIELAB Volume Metric to the
14:50 Latest Electronic Display**

H. Yoshida, K. Hirai, Y. Mizokami*
Sharp, Japan
Chiba Univ., Japan

**VHF8 - 2 Helmholtz-Kohlrausch Effect Estimation
15:15 Considering Lightness**

Y. Hayami, D. Takasu, H. Aoyanagi, H. Takamatsu*,
Y. Shimodaira, G. Ohashi*

Shizuoka Univ., Japan

**NEC Display Solutions, Japan*

**VHF8 - 3 Observer Metamerism for Anomalous Trichromats
15:35 and the Elderly in a Wide Color Gamut Display**

*S. Sunaga, R. Suto, S. Katsura, H. Yaguchi**

Kyushu Univ., Japan

**Chiba Univ., Japan*

Author Interviews

16:20 – 16:50

IDW '18 Tutorial in Japanese

Organized by SID Japan Chapter

Tuesday, Dec. 11, 2018

International Conference Rooms

(3F, Building 3)

Nagoya Congress Center

Detailed information will be announced at

<http://www.sid-japan.org/>

Evening Get-Together with Wine

Tuesday, Dec. 11, 2018

18:00 – 20:00

Cafeteria Cascade (B1F, Building 3)

Nagoya Congress Center

Sponsored by Merck Performance Materials Ltd.

See page 14 for details

Special Topics of Interest on Haptics Technologies

Wednesday, December 12

13:25 - 14:35

Room 224

INP1: Haptic Technologies

Chair: Y. Tanaka, Nagoya Inst. of Tech., Japan

Co-Chair: H. Ishizuka, Kagawa Univ., Japan

INP1 - 1 *Invited* Smart Rubber Technology and Its Applications

13:25

K. Nakano

Sumitomo Riko, Japan

INP1 - 2 *Invited* Development of Electro-vibration Tactile Displays with Microfabrication and Digital Fabrication

13:50

H. Ishizuka

Kagawa Univ., Japan

INP1 - 3 *Toward the Modeling of Tactile Sensation on Electrostatic Tactile Display*

14:15

H. Tomita, S. Takahashi, S. Saga^{}, S. Vasilache, H. Kajimoto^{**}*

Univ. of Tsukuba, Japan

^{}Kumamoto Univ., Japan*

*^{**}Univ. of Electro-Commun., Japan*

----- Break -----

Author Interviews

18:15 – 18:40

IDW Best Paper Award

IDW Outstanding Poster Paper Award

These awards will go to the most outstanding papers selected from those presented at IDW '18.

The 2018 award winners will be announced on the IDW website: <http://www.idw.or.jp/award.html>

Topical Session on User Experience and Cognitive Engineering

Wednesday, December 12

13:20 - 13:25

Room 133

Opening

Opening Remarks

13:20

M. Mori, Hosei Univ., Japan

13:25 - 14:25

Room 133

UXC1: Visual Experience

Chair: E. Amasawa, Univ. of Tokyo, Japan

Co-Chair: M. Mori, Hosei Univ., Japan

UXC1 - 1 13:25 **Visualizing Measurement Weather Data Based on Behavioral Scenarios**

K. Go, F. Watanabe, Y. Kinoshita, H. Ishidaira, K. Soma, J. Magome

Univ. of Yamanashi, Japan

UXC1 - 2 13:45 **Difference in Fixation of Designers and Non-designers in Flyers**

Y. Andoh^{,**}, T. Fujinami^{*}*

^{}JAIST, Japan*

*^{**}Fuji Xerox, Japan*

UXC1 - 3 14:05 **Determination of Evaluation Index of Multi-information Display Printing Using Lenticular**

K. Shibuta

Tokyo Tech, Japan

----- Break -----

Author Interviews

18:10 - 18:40

Thursday, December 13

9:00 - 10:15

Room 131

UXC2: Tangible Interface and Education

Chair: H. Shibata, Fuji Xerox, Japan
 Co-Chair: K. Go, Univ. of Yamanashi, Japan

**UXC2 - 1 Invited Technology and Application of Tactile
 9:00 Presentation**

Y. Hashimoto^{,**}*

^{}Univ. of Tsukuba, Japan*

*^{**}JST PRESTO, Japan*

UXC2 - 2 Invited Digital Technologies in Education

9:25

M. Sogo

Z-kai, Japan

**UXC2 - 3 Invited Facilitating Problem Solving with Stimulating
 9:50 Unconscious Cognitive Process**

S. V. Suzuki

Osaka Univ. of Economics & Law, Japan

----- Break -----

Author Interviews

10:40 – 11:10

17:10 - 18:35

Room 133

**EP4/UXC3: Approaches to Ideal Replacement
 of Paper Media**

Chair: M. Omodani, Tokai Univ., Japan
 Co-Chair: J. Kobayashi, Dai Nippon Printing, Japan

**EP4/
 UXC3 - 1 Invited Diffusion of e-Book in Japan from the View
 17:10 Point of Consumer Activities**

M. Ueda

Kyoto Sangyo Univ., Japan

**EP4/
 UXC3 - 2 Evaluation of Ease of Handling for a Digital Paper
 17:35 Device**

H. Shibata, M. Omodani^{}*

Fuji Xerox, Japan

^{}Tokai Univ., Japan*

**EP4/
 UXC3 - 3 Comparative Analysis of Reading Experience in
 17:55 Paper Book, e-Reader, and Flexible e-Reader Based
 on Kano Model**

E. Amasawa, T. Ihara, K. Hanaki

Univ. of Tokyo, Japan

**EP4/
UXC3 - 4
18:15** **Smart Devices Enabled by e-Paper Displays and IoT**
*K. Blankenbach, D. Bogner, A. Marsal, K. Schuhmacher,
P. Duchemin^{*}, B. Rist^{**}*
Pforzheim Univ., Germany
^{*}*MSC Techs., Germany*
^{**}*August Faller, Germany*

Author Interviews

18:40 – 19:10

Friday, December 14

9:00 - 10:20

Room 133

DES2/UXC4: AI Applied to Display
Special Topics of Interest on Automotive Displays

Chair: T. Sato, AIST, Japan
Co-Chair: Y. Ando, Fuji Xerox, Japan

**DES2/
UXC4 - 1
9:00** ***Invited* 3D Image Processing Based on Machine Learning**
T. Fujii
Nagoya Univ., Japan

**DES2/
UXC4 - 2
9:20** ***Invited* Road Scene Understanding Using Image Recognition for Safety and Autonomous Driving**
T. Watanabe
Toshiba, Japan

**DES2/
UXC4 - 3
9:40** ***Invited* Font Style Transfer Using Deep Neural Networks**
W. Shimoda, A. Narusawa, K. Yanai
Univ. of Electro-Commun., Japan

**DES2/
UXC4 - 4
10:00** **TalkingDraw: Support Drawing Diagrams in Talking with Voice and Pen**
X. Xu, H. Shibata
Fuji Xerox, Japan

----- Break -----

Author Interviews

12:00 – 12:30

----- Lunch -----

Workshop on LC Science and Technologies

Wednesday, December 12

13:20 - 14:20

Reception Hall 2

LCT1: Liquid Crystal Alignment Technology

Chair: M. Inoue, TOYOTech, USA
 Co-Chair: H. Okada, Univ. Toyama, Japan

LCT1 - 1 **The Effect of Hybrid Reactive Mesogen System in Polymer-Stabilized Vertical Alignment Liquid Crystal Display**
13:20

H. Wei, Q. Li, T.-J. Tseng, C.-C. Hsieh, C.-Y. Chiu, H.-C. Lin
Shenzhen China Star Optoelect. Tech., China

LCT1 - 2 **Fabrication of a Polymer-Stabilized Liquid Crystal Cell through Low-Temperature UV Curing Process for Control of Haze Value**
13:40

B.-G. Jeon, T.-H. Choi, S.-M. Do, T.-H. Yoon
Pusan Nat. Univ., Korea

LCT1 - 3 **Image Sticking Reduction in Full-Screen LCDs with Ultra Narrow Border**
14:00

B. Chen, Y. Zeng, A. Ling, P. Shen, J. Li
Xiamen Tianma Microelect., China

----- Break -----

15:00 - 16:00

Reception Hall 2

LCT2: Novel LCD Technologies

Chair: F. Araoka, RIKEN, Japan
 Co-Chair: K. Miyachi, JSR, Japan

LCT2 - 1 ***Invited* High Performance LCD Technology for 3D Head-Up Displays**
15:00

Y. Tanaka, M. Murata, R. Yokoyama, Y. Mochizuki,
T. Hosokawa, K. Ogura, Y. Yanagihara, K. Kusafuka,
T. Matsumoto
Kyocera, Japan

LCT2 - 2 ***Invited* Fast Switching LC Device and Directional Beam Splitter Array for 3D Display**
15:20

J. Lu
Shanghai Jiao Tong Univ., China

**LCT2 - 3 Invited Modern Display Applications Based on ESH
15:40 Ferroelectric Liquid Crystals**

*A. K. Srivastava, L. Shi, H.-S. Kwok
Hong Kong Univ. of S&T, Hong Kong*

----- Break -----

16:40 - 18:00

Reception Hall 2

PRJ2/LCT3: LC-Based Eye Devices

Chair: O. Akimoto, Sony Semiconductor Solutions, Japan
Co-Chair: T. Ishinabe, Tohoku Univ., Japan

PRJ2/ Invited Liquid Crystal Lenses for Augmented Reality

**LCT3 - 1
16:40**

*Y.-H. Lin, Y.-J. Wang
Nat. Chiao Tung Univ., Taiwan*

**PRJ2/ Design of Liquid Crystal Based Switchable Contact
LCT3 - 2 Lenses**

17:00

D. Cuypers^{,**}, R. Verplancke^{*,**}, H. D. Smet^{*,**}
^{*}imec, Belgium
^{**}Ghent Univ., Belgium*

**PRJ2/ Liquid Crystal Displays Compatible with Contact
LCT3 - 3 Lenses for Vision Correction Applications**

17:20

A. V. Quintero, P. Pérez-Merino^{}, R. Verplancke,
J. Vanfleteren, H. D. Smet
Ghent Univ., Belgium
^{*}Fundación Jiménez Díaz, Spain*

**PRJ2/ Applications of Liquid Crystal Lens with Focal
LCT3 - 4 Length Variable from Negative to Positive Values**

17:40

*J. J. Gao, J. L. Yeh, J. W. Pan, S. C. Jeng
Nat. Chiao Tung Univ., Taiwan*

Author Interviews

18:10 – 18:40

Late-News Papers

Due Oct. 1, 2018

Submit two to four-page camera-ready manuscript
via IDW website:

<http://www.idw.or.jp/latenews.html>

Thursday, December 13

9:00 - 10:20

Reception Hall 2

LCT4/FMC4: New Materials and Components for LCDs

Chair: S. Oka, Japan Display, Japan
 Co-Chair: R. Yamaguchi, Akita Univ., Japan

LCT4/ FMC4 - 1 *Invited* **The Application of Quantum Dot in TV Display Technology**

9:00

*N. Chen, H. Ji**TCL Elect. Holdings, China*

LCT4/ FMC4 - 2 *Invited* **Cholesteric Liquid Crystals As Solution-Processable Holographic Optical Elements**

9:20

H. Yoshida^{,**}, S. Cho^{*}, M. Ono^{*}, Y. Tsuboi^{*}, Z. Fan^{*}, M. Ozaki^{*}**^{*}Osaka Univ., Japan**^{**}JST, Japan*

LCT4/ FMC4 - 3 **Novel Black Photo Spacer Structure Applied in Liquid Crystal Display Technology**

9:40

*W. Gao, M. Liu, Z. Deng, Y. Lin, C. Chiu, C. Lee**Shenzhen China Star Optoelect. Tech., China*

LCT4/ FMC4 - 4 **New Reflective Polarizer Film for Automotive e-Mirror Application**

10:00

H. Matsuda, K. Toyooka, M. Kugue^{}**3M Japan Prods., Japan**^{*}3M Japan, Japan*

----- Break -----

Author Interviews

10:40 – 11:10

10:40 - 13:10

Event Hall

Poster LCTp1: High Reliability

LCTp1 - 1 **Analysis of LCDs Vibration Mura for Automotive Applications**

Q. Feng, Z. Hu, S. Xu^{}, L. Yu^{*}, G. Lv**Hefei Univ. of Tech., China**^{*}Wuhu Token Sci., China*

LCTp1 - 2 **The Investigation and Analysis on the Lower Limit of LCDs Liquid Crystal Margin**

*K. Hsiao, X. Xu, P. Zhang, H. Shu, Z. Wang, D. Shao, G. Tang**Shenzhen China Star Optoelect. Tech., China*

- LCTp1 - 3 The Investigation about Influence of Polyimide on around Mura**
Y. Zhao, Y. Song, B. Chi, C.-C. Hsieh, C.-Y. Chiu, H.-C. Lin
Shenzhen China Star Optoelect. Tech., China
- LCTp1 - 4 Analysis of TFT-LCD Ink-Jet-Printing Mura Mechanism**
F. Yuan, Y. Zhao, Y. Song, C.-C. Hsieh, C.-Y. Chiu, H.-C. Lin
Shenzhen China Star Optoelect. Tech., China
- LCTp1 - 5 The Research of Flicker in FFS Display Mode**
Y. Wang, C. Ye, Q. He, Z. Lin, C. Xing, X. Gao
Nanjing CEC Panda FPD Tech., China

10:40 - 13:10

Event Hall

Poster LCTp2: Liquid Crystal Alignment Technology

- LCTp2 - 1 Chemical Structure Transitions of Photo-Alignment Layer with High Azimuthal Anchoring Energy Induced by Photo-Fragment Reaction**
I. H. Lee, D. M. Shin
Hongik Univ., Korea
- LCTp2 - 2 The LC Alignment Investigation at the Different Morphology with PSVA LC Curing Method in Curve Design Structure**
C. Yuan, Y.-J. Song, Y.-C. Zhao, W. Ren, J. Chen,
C.-C. Hsieh, H.-C. Lin, C.-Y. Chiu
Shenzhen China Star Optoelect. Tech., China
- LCTp2 - 3 Study on the Effect of Controlling the Pretilt Angle using RM with Multipolymerizable Functional Group**
Q. Li, H. Wei, T.-J. Tseng, C.-C. Hsieh, H.-C. Lin, Y.-H. Lee
Shenzhen China Star Optoelect. Tech., China

10:40 - 13:10

Event Hall

Poster LCTp3: High Image Quality

- LCTp3 - 1 Methods to Improve Sandy Mura in Large-Size TFT-LCDs**
M. Li, Y. Yao, J. Zhou, J. Hsu, W. Chen, Y. Lu
Chongqing HKC Optoelect. Tech., China

- LCTp3 - 2** **Enhancement of Color Gamut Using New Advanced Phosphors in Nano IPS**
J. Choi, Y. Park, K. Kim, J. Shin, D.-J. Lee, J. Park
LG Display, Korea
- LCTp3 - 3** **Study of Optimized Design to Achieve Wide-Viewing Performance for Automotive Displays**
C. C. Huang, W. T. Liao, Y. C. Liu, Y. C. Lai, Y. L. Cheng, H. P. Chiu
Chunghwa Picture Tubes, Taiwan
- LCTp3 - 4** **Research on White Stains Failure Analysis Simulation with ADS LCD**
S. Yuan, X. Liu, Y. Chen, M. Wang, C. Wu, Z. Zheng, R. Zhang, Y. Sun, Y. Ma, X. Zheng
BOE Display Tech., China
- LCTp3 - 5** **Application Research of LCD Screen Reflectivity Improvement via Optimizing SiO_xN_y Interlayer Film**
P. Gao, C. Mo, X. Lin, L. Chen, S. Sun, W. Zhang
Shenzhen China Star Optoelect. Tech., China
- LCTp3 - 6** **Research the Effect of Different Circular Polarizers on Reflective LCDs**
Y. Chen, X. Liu, M. Wang, S. Yuan, Y. Ma, C. Wu, Z. Zheng, R. Zhang, Y. Sun, J. Chen
Beijing BOE Display Tech., China
- LCTp3 - 7** **Effect of Low Pre-Tilt Angle on Transmittance in Photo Aligned Vertical LCDs**
W. Gao, Z. Liu, G. Ma, J. Xuan, H. Zhao, C. Zhu, F. He, B. Gu
Nanjing CEC Panda FPD Tech., China

10:40 - 13:10

Event Hall

Poster LCTp4: Novel LCD Technology

- LCTp4 - 1** **Peripheral Liquid Crystal Efficiency in Pixel of Vertical Alignment Display**
K. Qu, S. Hao
Shenzhen China Star Optoelect. Tech., China
- LCTp4 - 2** **Color Polymer-Dispersed Liquid Crystal Displays by Mean of Photo-Polymerization Method**
G. H. Kim, W.-J. Lee, C.-S. Hwang
ETRI, Korea

- LCTp4 - 3** **Reduction of Driving Voltage of Reverse-Mode LC Light-Scattering Device by Incorporating UV Curable Silica NPs**
E. Fukuda, M. Akimoto, S. Kobayashi, M. Miyazaki
Sanyo-Onoda City Univ., Japan
- LCTp4 - 4** **Effect of UV Irradiation on Bandwidth of Selective Transmittance Spectra in Polymer Stabilized Cholesteric Liquid Crystals**
*A. Ogiwara, H. Kakiuchida**
Kobe City College of Tech., Japan
**AIST, Japan*
- LCTp4 - 5** **Memory Properties of Silica-Dispersed LCDs**
C.-L. Lee, S.-C. Jeng
Nat. Chiao Tung Univ., Taiwan
- LCTp4 - 6** **An Anti-Aliasing Design for Full Screen Display of Rounded Corner**
B. Zheng, Y. Yang, Y. Zeng, L. Wu, P. Shen, J. Li
Xiamen Tianma Microelect., China
- LCTp4 - 7** **Analysis of Vertical Moiré-Like Phenomenon of a Half-Source-Driving Liquid Crystal Display**
Z. Li, B. Han, H. Chang, C. Wu, H. Wang, J. Gao, M. Shi, Z. Chen, R. Lu
Chongqing HKC Optoelect. Tech., China
- LCTp4 - 8** **Novel RGBW Color System with White Incorporated in Subpixels**
Z. Jiang, H. Xu, T. Ou, C. Liu, C. Su, C. Lee
Shenzhen China Star Optoelect. Tech., China
- LCTp4 - 9** **A Novel Panel Circuit to Achieve the Notch Panel with High Performance and High Specifications**
L. B. Ping, X. Z. Qing, C. G. Zhao, L. J. Yi, P. X. Hui, W. Lei
Xiamen Tianma Microelect., China
- LCTp4 - 10** **Dye-Doped Chiral-Nematic Liquid Crystals with Enhanced Opaque State**
S.-H. Kim, S.-W. Oh, T.-H. Yoon
Pusan Nat. Univ., Korea
- LCTp4 - 11** **The Novel TN LCD of the Lowest Driving Voltage**
K. Takatoh, I. Watanabe, Y. Yonezawa, K. Goda
Sanyo-Onoda City Univ., Japan

- LCTp4 - 12** **Switching of an LC Mixture without Ion Dopants Between Transparent and Translucent States by the Electro-Hydrodynamic Effect**

*Y.-S. Jo, T.-H. Choi, S.-M. Ji, S.-M. Nam, T.-H. Yoon
Pusan Nat. Univ., Korea*

- LCTp4 - 13** **A New Circular Optical-Clear Structure for Full-Screen LCD**

*H. Wang, Y. Yang, B. Zheng, L. Wu, B. Shen, J. Li
Xiamen Tianma Microelect., China*

----- Lunch -----

17:10 - 18:15

Reception Hall 2

FLX3/LCT5: Advanced Flexible Displays

Chair: M. Kimura, Nagaoka Univ. of Tech., Japan
Co-Chair: T. Eguchi, Sumitomo Bakelite, Japan

- FLX3/
LCT5 - 1
17:10** ***Invited* Technology Advances for Flexible Transparent AMOLED and Electronics**

*M.-H. Yang, Y.-T. Tsai, J.-C. Ho, S. Chiu, C.-C. Lee
ITRI, Taiwan*

- FLX3/
LCT5 - 2
17:35** **6.9-in. Flexible Transparent Display Using by SALC Technology and Applications**

*C. C. Chiou, C. H. Chen, J. T. Lian
Chunghwa Picture Tubes, Taiwan*

- FLX3/
LCT5 - 3
17:55** **The Research and Design of Transparency Hole Screen**

*X. Zhou, G. Lai, H. Wu, H. Zhou, J. Liu, X. Yang, X. Lan,
Y. Yang, P. Shen, J. Li
Xiamen Tianma Microelect., China*

Author Interviews

18:40 – 19:10

SPECIAL EVENT

PROJECTION MAPPING

Live demonstrations of leading-edge
technologies

Wednesday, Dec. 12 – Friday, Dec. 14, 2018

Room221 (2F, Building 2)

Nagoya Congress Center

Friday, December 14

10:40 - 11:40

Room 131

LCT6: Wide Color Gamut LCDs
Special Topics of Interest on Wide Color Gamut and
Color Reproduction

Chair: S. Shibahara, Sony Visual Products, Japan

Co-Chair: S. Kawasaki, JNC Korea, Korea

LCT6 - 1 *Invited* **History of Wide Color Gamut (WCG)**
10:40 **Technology in Display**

M. S. Kwak, Y. H. Kim, S. H. Han, A. K. Kim, S. I. Kim,
M. Jun, I. B. Kang

LG Display, Korea

LCT6 - 2 *Invited* **Sunlight Readable FFS LCD with High**
11:00 **Contrast Ratio and Wide Color Gamut Under High**
Ambient Light Situations

Y. Kawahira, K. Murata, T. Nakai, M. Hasegawa, A. Sakai,
*K. Minoura, N. Smith**

Sharp, Japan

**Sharp Labs. of Europe, UK*

LCT6 - 3 **Analyzing and Improving the Bluish Issue at VA**
11:20 **Dark State**

C. Chen, Y. Wang, Y. Lin, B. Hai, Y. Hsiao

Shenzhen China Star Optoelect. Tech., China

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

Reception Hall 2

LCT7: Liquid Crystal Phase Shifter

Chair: K. Miyachi, JSR, Japan

Co-Chair: H. Yoshida, Osaka Univ., Japan

LCT7 - 1 *Invited* **Liquid Crystal Based Tunable Antenna**
13:10 **Systems**

H. Maune, M. Jost, R. Reese, M. Nickel, E. Polat,
R. Jakoby

Darmstadt Univ. of Tech., Germany

LCT7 - 2 *Invited* **Structurally Simplified LC Millimeter-Wave**
13:30 **Phase Shifter Based on Microstrip Line**

T. Nose, K. Iiyama, M. Masaka, K. Ito*, R. Ito, M. Honma*
Akita Pref. Univ., Japan

**Yurikogyo, Japan*

**LCT7 - 3 Invited Microwave, Milliwave and Terahertz Wave
13:50 Phase Shifter Using LC-Loaded Transmission Line**

H. Moritake, Y. Inoue

Nat. Defense Ac., Japan

**LCT7 - 4 A High-Efficiency Beam Steering LCoS Device
14:10**

C. Sun, S. Zha, J. Lu

Shanghai Jiao Tong Univ., China

----- Break -----

14:50 - 16:10

Reception Hall 2

LCT8: Liquid Crystal Applications

Chair: T. Nose, Akita Pref. Univ., Japan

Co-Chair: H. Moritake, Nat. Defense Ac., Japan

**LCT8 - 1 Reflective Color Liquid Crystal Display Using a
14:50 Guided-Mode Resonator Grating as a Reflector**

C.-T. Wang, P.-C. Chang, J.-J. Lin, Y.-J. Hung, T.-H. Lin

Nat. Sun Yat-Sen Univ., Taiwan

**LCT8 - 2 10.1-in. Active-Matrix Reflective Display by Using
15:10 Proprietary Surface Anchoring Liquid Crystal and
High Performance Front-Light Module**

T.-L. Lin, C.-H. Chen, J.-T. Lian

Chunghwa Picture Tubes, Taiwan

**LCT8 - 3 Polarization-Selective Multi-Wavelength Bragg
15:30 Diffractions Using Slanted Holographic Polymer
Dispersed Liquid Crystals**

*H. Kakiuchida, A. Ogiwara**

AIST, Japan

**Kobe City College of Tech., Japan*

**LCT8 - 4 A Model for the Formation of Mura During the
15:50 One-Drop-Filling Process**

J. R. L. Cousins, S. K. Wilson, N. J. Mottram, D. Wilkes,
L. Weegels*, K. Y. Lin***

Univ. of Strathclyde, UK

**Merck KGaA, Germany*

***Merck PM, Taiwan*

Author Interviews

16:20 – 16:50

Workshop on Active Matrix Displays

Wednesday, December 12

13:20 - 14:35

Reception Hall 1

AMD1: 8K Display

Chair: K. Nomoto, Sony, Japan

Co-Chair: K. Omoto, Apple, Japan

AMD1 - 1 *Invited* 8K Super Hi-Vision Broadcasting and Related Display Technologies

13:20

H. Tsuji

NHK, Japan

AMD1 - 2 *Invited* The Worlds First 85-in. 8K x 4K 120 Hz VA-LCD Driven by BCE IGZO GOA

13:45

*L.-Q. Shi, Y.-F. Chou, Y.-C. Zhao, S.-J. Chen, F. Zhao,
S.-M. Ge, Z.-J. Kong, F.-C. Xu, P. Du, C.-Y. Chiu, R. Lin*

Shenzhen China Star Optoelect. Tech., China

AMD1 - 3 *Invited* Current Status and Future Technology for Large-Screen 8K IGZO Display

14:10

*H. Kitagawa, Y. Hara, Y. Iwase, T. Kikuchi, J. Morinaga,
H. Ohgami, H. Imai, T. Daitoh, T. Matsuo*

Sharp, Japan

----- Break -----

15:00 - 16:10

Reception Hall 1

AMD2: Active-Matrix Micro-LED Display

Chair: M. Inoue, Huawei Techs. Japan, Japan

Co-Chair: H. Hamada, Kinki Univ., Japan

AMD2 - 1 *Invited* Ultra-High-Brightness Micro-LED Micro Display for Next-Generation Augmented Reality Application

15:00

Y. Chen, F. Ou, W. C. Chong, Y. Zhu, S. Zhao, L. Zhang

Hong Kong Beida Jade Bird Display, Hong Kong

AMD2 - 2 *Invited* Device Structure and Manufacturing Process for Highly Flexible Micro LED Display

15:25

*K. Kajiyama, Y. Suzuki, T. Hirano, Y. Yanagawa, K. Fukaya,
A. Shimoura*

V Tech., Japan

**AMD2 - 3 A New Compensation Pixel Circuit for AMOLED
15:50 with a-IGZO TFTs**

Y. Su, G. Di, Y. Gong^{}, X. Shi, C. Lu, N. Lu, L. Li, M. Liu*

Univ. of Chinese Ac. of Sci., China

^{}Shandong Univ., China*

----- Break -----

Author Interviews

18:10 – 18:40

Thursday, December 13

9:00 - 9:50

Reception Hall 1

AMD3: Advanced Process OTFT

Chair: T. Okamoto, Univ. of Tokyo, Japan

Co-Chair: Y. Fujisaki, NHK, Japan

**AMD3 - 1 Invited All-Inkjet-Printed Thin Film Transistors (TFTs)
9:00 – Architecture, Manufacturing and Specs**

R. Baumann, E. Sowade^{}, K. Y. Mitra^{**}*

Technische Univ. Chemnitz, Germany

^{}Zschimmer & Schwarz, Germany*

*^{**}Fraunhofer Inst. for Elect. Nano Sys., Germany*

**AMD3 - 2 Invited Industrialisation of OLCD: Manufacturing
9:25 and Performance Attributes of OTFT-Based LCDs**

P. Cain

FlexEnable, UK

----- Break -----

Author Interviews

10:40 – 11:10

10:40 - 13:10

Event Hall

**Poster AMDp1: Oxide TFTs
Special Topics of Interest on Oxide-Semiconductor TFT**

**AMDp1 - 1 Organic Passivation Layer in Back-Channel-Etch
Amorphous InGaZnO Thin Film Transistor with Color
Filter on Array Structure for Large Size High
Resolution Display Application**

*G. T. Li^{***}, W. Wu^{**}, F. Zhu^{**}, J. J. Liu^{**}, Y. H. Meng^{**}, S. Li^{**},
H. Zhou^{*}*

^{}Peking Univ., China*

*^{**}Shenzhen China Star Optoelect. Tech., China*

- AMDp1 - 2** **Detecting Thickness of Accumulation Layer in a-IGZO Thin Film Transistors by Kelvin Probe Force Microscopy**
X. Shi^{,**}, C. Lu^{*}, D. Geng^{*}, N. Lu^{*}, J. Wang^{*}, L. Li^{*}, M. Liu^{*}*
^{}Chinese Ac. of Sci., China*
*^{**}Univ. of Chinese Ac. of Sci., China*
- AMDp1 - 3** **Highly Stable Self-Aligned Coplanar Bulk Accumulation a-IGZO TFTs Under High Temperature Bias Stress**
H. Kim, S. Lee, J. Lee, J. Jang
Kyung Hee Univ., Korea
- AMDp1 - 4** **In-O-N Thin-film Transistors with Superior Stability**
H.-D. Kim, H.-S. Kim
Chungnam Nat. Univ., Korea
- AMDp1 - 5** **Comparator for Integrated Readout Circuits with a-IGZO TFTs**
Y. Gong^{,**}, D. Geng^{*}, Y. Su^{*}, X. Shi^{*}, C. Lu^{*}, N. Lu^{*}, L. Li^{*}, M. Liu^{*}*
^{}Chinese Ac. of Sci., China*
*^{**}Shandong Univ., China*
- AMDp1 - 6** **A Study on Degradation Mechanism of Flexible a-InGaZnO Thin Film Transistor Under Repetitive Bending Stress Using Simulation**
K.-L. Han, H.-J. Jeong, B.-S. Kim, S. Oh, J.-S. Park
Hanyang Univ., Korea
- AMDp1 - 7** **a-IGZO TFT Gate Driver Circuit for Suppressing Ripple Voltage without Pull-Down Unit**
C. Y. Park, K.-H. Lee^{}, E. S. Ha^{*}, Y.-S. Kim*
Sungkyunkwan Univ., Korea
^{}Gyeonggi Sci. High School, Korea*
- AMDp1 - 8** **High Performance In-Ga-Zn-O Thin-Film Transistors via Microwave and Electron-Beam Radiation at Room Temperature**
S.-C. Jang, H.-D. Kim, H.-S. Kim
Chungnam Nat. Univ., Korea
- AMDp1 - 9** **Low-Temperature Processed IGTO Thin-Film Transistors with High Mobility by Reducing Deposition Pressure**
H.-A. Kim, J. O. Kim, J. S. Hur, J. K. Jeong
Hanyang Univ., Korea

**AMDp1 - 10 IGZO TFT Gate Driver Circuit
Capable of Compensating Threshold Voltage Shift
for Pull-down Unit**

J. Oh, J.-H. Kim, K.-H. Lee^{}, E. S. Ha^{*}, K. C. Park^{**},
J.-H. Jeon^{***}, Y.-S. Kim*

Sungkyunkwan Univ., Korea

^{}Gyeonggi Sci. High School, Korea*

*^{**}Konkuk Univ., Korea*

*^{***}Korea Aerospace Univ., Korea*

**AMDp1 - 11 Double-Layered Indium-Zinc-Oxide Thin Film
Transistors with an Addition of Hydrogen Peroxide**

W. Jeon, B. Choi

Sungkyunkwan Univ., Korea

**AMDp1 - 12 Effects of Magnetic Field Shielded Sputtering
Process on the Properties of IGZO TFT**

Y. Yang, D. Lee, S. Kim, M. Hong

Korea Univ., Korea

10:40 - 13:10

Event Hall

Poster AMDp2: Active-Matrix Devices

**AMDp2 - 1 Corner and Binning Model Simulation of TFT for
GOA Driver Circuit in G8.6 Large-Size TFT-LCDs**

Q.-H. Mo, A.-T. Cho, J. Hsu, W. Chen, Y. Lu

Chongqing HKC Optoelect. Tech., China

**AMDp2 - 2 Analysis of CMOS Inverters on AC Operation
Formed by Low Temperature Poly-Silicon TFTs
with Metal Source-Drain Using BLDA**

K. Lee, K. Shimai, W. Choi, T. Okada^{}, T. Noguchi^{*}*

Nihon Synopsys, Japan

^{}Univ. of the Ryukyus, Japan*

**AMDp2 - 3 New Pixel Circuit with Parallel Addressing Scheme
to Compensate for Variations of LTPS TFTs
for AMOLED Displays**

J.-H. Chang, P.-S. Chen, C.-L. Lin

Nat. Cheng Kung Univ., Taiwan

**AMDp2 - 4 The Methods to Reduce the RC Delay Issues for the
Real-Time External Compensation AMOLED Circuit**

C.-H. Lin, Y.-H. Tai

Nat. Chiao Tung Univ., Taiwan

- AMDp2 - 5** **A Novel Method to Modify Over-Current Protection Threshold Current Miss Trigger Problem in Gate Driver on Array TFT-LCD**
X. Lv, S. Chen, P. Jiang, L. Zeng, J. Zhu, W. Shao, Q. Liu, S. Xi, Y. Chou, C. Qiu, R. Lin
Shenzhen China Star Optoelect. Tech., China
- AMDp2 - 6** **Pixel Circuit to Prevent Flicker Using Voltage Programming Method for AMOLED Displays**
Y.-C. Chu, L.-J. Chen, C.-L. Lin
Nat. Cheng Kung Univ., Taiwan
- AMDp2 - 7** **High Performance Pentacene TFTs with a Solution Processed PMMA/AlZrOx Gate Dielectric**
K.-M. Jung, J. Oh, J. Kim, K. C. Park, J.-H. Jeon**, Y.-S. Kim*
Sungkyunkwan Univ., Korea
**Konkuk Univ., Korea*
***Korea Aerospace Univ., Korea*
- AMDp2 - 8** **Collocation of Differential Circle and Film Filter on Embedded Luminance Sensor**
S.-B. Liu, J. C. Zhang, W. F. Fan, C.-T. Liao, H.-C. Lai, T.-C. Chung
InfoVision Optoelect., China
- AMDp2 - 9** **A New Formation of Multi-Layered n⁺ Silicon Films Using Four-Mask Process Architecture for Image Sticking Improvement in 32-in. TV Product**
F. Yang, A.-T. Cho, J. Hsu, Z. Liu, K.-J. Liu, Q.-H. Mo, W. Chen, Y. Lu
Chongqing HKC Optoelect. Tech., China
- AMDp2 - 10** **A Method to Reduce N⁺ Tail in Four-Mask Process of Gen 8.6 LCDs**
J. Hsu, J. Zhou, T. Fu, B. Ge, M. Li, Y. Yao, Y. Lu, W. Chen
Chongqing HKC Optoelect. Tech., China

----- Lunch -----

17:10 - 18:25

Reception Hall 1

AMD4: High-Performance OTFT

Chair: P. Cain, FlexEnable, UK
 Co-Chair: Y. Shibata, Tohoku Univ., Japan

- AMD4 - 1** **Invited Equivalent-Circuit Approach for the Interpretation of Modulus Spectra of Organic Field-Effect Transistors**

17:10

H. Naito, Y. Suenaga, T. Nagase, T. Kobayashi
Osaka Pref. Univ., Japan

AMD4 - 2 *Invited* **High Mobility Single-Crystalline Organic Semiconductors Exhibiting Chemical and Thermally Robustness**
17:35

T. Okamoto^{*,**}

^{*}*The Univ. of Tokyo, Japan*

^{**}*JST PRESTO, Japan*

AMD4 - 3 *Invited* **New High Performance Heteroacene-type Semiconductors for Flexible OLED Display**
18:00

J.-I. Park

Samsung Elect., Korea

Author Interviews

18:40 – 19:10

Friday, December 14

9:00 - 10:05

Reception Hall 1

AMD5: Emerging TFT

Chair: S.-H. K. Park, KAIST, Korea

Co-Chair: T. Noguchi, Univ. of the Ryukyus, Japan

AMD5 - 1 *Invited* **Development of P-type Transparent Amorphous Semiconductor**
9:00

J. Kim, T. Jun, J. Bang, K. Aoyama, H. Hosono

Tokyo Tech, Japan

AMD5 - 2 **Near-Infrared Thin Film Phototransistor with Energy Band-Tunable Zinc Oxynitride Semiconductor**
9:25

H. M. Lee, H. J. Jeong, E. J. Park, Y. S. Rim^{}, J. S. Park*

Hanyang Univ., Korea

^{*}*Sejong Univ., Korea*

AMD5 - 3 **A 5.46-in. Advanced LTPS TFT-LCD Using Top-Gate Oxide TFT in Pixel**
9:45

M. Uchida, M. Tada, K. Mochizuki, T. Tsunashima,

H. Tanaka, T. Ito, H. Watakabe, A. Hanada, R. Kimura

Japan Display, Japan

----- Break -----

10:40 - 11:50

Reception Hall 1

AMD6: Oxide TFT: Device**Special Topics of Interest on Oxide-Semiconductor TFT**

Chair: J. Kim, Tokyo Tech, Japan
 Co-Chair: K. Takatori, Huawei Techs. Japan, Japan

AMD6 - 1 Invited Spreading Currents in Oxide TFTs
 10:40

S. Lee, J. Jang
Kyung Hee Univ., Korea

AMD6 - 2 Invited Top-Gate Oxide TFT Technologies
 11:05 **for Advanced LCDs**

I. Suzumura, Y. Yamaguchi, H. Kawanago
Japan Display, Japan

AMD6 - 3 Oxide Semiconductor Based Vertical TFT
 11:30 **for Ultra High-Resolution Backplane Technology**

*K.-H. Lee, S. Lee, H.-I. Yeom, J.-B. Ko, C.-S. Hwang**,
S.-H. K. Park
KAIST, Korea
**ETRI, Korea*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:35

Reception Hall 1

AMD7: Oxide TFT: Stability and Fundamental (1)**Special Topics of Interest on Oxide-Semiconductor TFT**

Chair: I. Suzumura, Japan Display, Japan
 Co-Chair: H. Kumomi, Tokyo Tech, Japan

AMD7 - 1 Invited Electronic Structure and Defects
 13:10 **in Amorphous Oxide Semiconductor:**
A Comprehensive Review

T. Kamiya, H. Kumomi, H. Hosono
Tokyo Tech, Japan

AMD7 - 2 Enhancing Reliability of Amorphous In-Ga-Zn-O
 13:35 **Thin Film Transistors by Nitrogen Doping**

T. Sung, K. Park, J. H. Kim, H.-W. Park**, P. Yun***,*
*J. Noh***, S. W. Lee***, K.-S. Park***, S. Y. Yoon***,*
*I. B. Kang***, K.-B. Chung**, H.-S. Kim*, J.-Y. Kwon*
Yonsei Univ., Korea
**Chungnam Nat. Univ., Korea*
***Dongguk Univ., Korea*
****LG Display, Korea*

- AMD7 - 3** **Simulation Study of Self-Heating Effects**
13:55 **on Amorphous Oxide Semiconductor TFTs:**
Channel-Length Dependence
K. Abe, M. Fujinaga, T. Kuwagaki
Silvaco Japan, Japan
- AMD7 - 4** **A 31-in. 4K2K AMOLED Display Using High Mobility**
14:15 **and Reliability Top-Gate Self-Align IGZO TFTs**
with Cu Electrode
Z.-S. Liu^{,**}, S.-N. Zhao^{*,**}, Y.-J. Hsu^{*,**}, J.-S. Im^{*,**},*
Y.-C. Wu^{,**}, P.-Y. Lu^{*,**}*
^{*}*Nat. Eng. Lab. for AMOLED Process Tech., China*
^{**}*Shenzhen China Star Optoelect. Semiconductor*
Display Tech., China

----- Break -----

14:50 - 15:55

Reception Hall 1

AMD8: Oxide TFT: Stability and Fundamental (2)
Special Topics of Interest on Oxide-Semiconductor TFT

Chair: T. Kamiya, Tokyo Tech, Japan

Co-Chair: S. Horita, JAIST, Japan

- AMD8 - 1** ***Invited* Highly Stable High Mobility Oxide TFT**
14:50 *J. B. Ko, S.-H. Lee, K. W. Park, S.-H. K. Park*
KAIST, Korea
- AMD8 - 2** **Improvement of the Stability Under High Voltage and**
15:15 **High Temperature Stress by Using Nitrogen Doped**
IGZO TFTs
I.-T. Cho, J. Noh, P. Yun, J. Jang, D. Lee, J.-H. Baeck,
S.-W. Lee, K.-S. Park, S. Y. Yoon, J.-Y. Kwon^{}, I. Kang*
LG Display, Korea
^{*}*Yonsei Univ., Korea*
- AMD8 - 3** **Development of Tunneling Contact a-IGZO TFT with**
15:35 **Graphene Interlayer**
L. Wang, L. Zhang^{}, Z. Zhu, H. Zhu*
Visionox Tech., China
^{*}*Shenzhen Univ., China*

Author Interviews

16:20 – 16:50

Supporting Organizations:

Thin Film Materials & Devices Meeting

Technical Committee on Electronic Information Displays, Electronics Society, IEICE

Workshop on FPD Manufacturing, Materials and Components

Wednesday, December 12

13:20 - 14:40

Room 131

FMC1: MicroLED Display

Chair: H. Fujioka, Univ. of Tokyo, Japan

Co-Chair: K. Kälantär, Global Optics Solutions, Japan

FMC1 - 1 *Invited* Feasibility of Nitride Micro-LEDs Prepared by Sputtering

13:20

H. Fujioka^{,**}, K. Ueno^{*}, A. Kobayashi^{*}*

^{}Univ. of Tokyo, Japan*

*^{**}JST ACCEL, Japan*

FMC1 - 2 *Invited* Wavelength-Stable and Narrow-Band Red LED for Monolithic Micro-LED Display

13:40

Y. Fujiwara

Osaka Univ., Japan

FMC1 - 3 *Invited* Smart Micro-LED Display with Synchronized Information Broadcast for Enhanced User Interaction

14:00

X. Li^{,**}, B. Hussain^{**,*}, J. Kang^{*,**}, C. Y. Lee^{**,***},
H. S. Kwok^{**}, C. P. Yue^{**,**}*

^{}HKUST Shenzhen Res. Inst., China*

*^{**}Hong Kong Univ. of S&T, China*

*^{***}Hong Kong Innovative Display Tech., China*

FMC1 - 4 Status and Prospects of Micro LED Displays Advancements

14:20

E. Virey, Z. Bouhamri, P. Mukish

Yole Développement, France

----- Break -----

15:05 - 16:25

Room 131

PRJ1/FMC2: Waveguide for AR-Near Eye Display
Special Topics of Interest on AR/VR and Hyper Reality

Chair: D. Cuypers, CMST, Belgium
 Co-Chair: K. Käläntär, Global Optical Solutions, Japan

PRJ1/ FMC2 - 1 ***Invited* A Plastic Holographic Waveguide Combiner for Light-Weight and Highly-Transparent Augmented Reality Glasses**
 15:05

T. Yoshida, K. Tokuyama, Y. Takai, D. Tsukuda, T. Kaneko, N. Suzuki, T. Anzai, A. Yoshikaie, K. Akutsu, A. Machida Sony, Japan*
**Sony Global Manufacturing & Operations, Japan*

PRJ1/ FMC2 - 2 **Waveguide-HOE-Based Camera That Captures a Frontal Image for Flat-Panel Display**
 15:25

H. Konno, S. Igarashi*, T. Nakamura*,**, M. Yamaguchi**
**Tokyo Tech, Japan*
***JST PRESTO, Japan*

PRJ1/ FMC2 - 3 **Novel Holographic Waveguide Display with Kepler Telescope Configuration**
 15:45

Z. Shen, Y. Zhang, A. Liu, Y. Weng, X. Zhu, X. Li Southeast Univ., China

PRJ1/ FMC2 - 4 **Light Efficiency Modeling for a Holographic Waveguide Display**
 16:05

X. Zhu, Y. Zhang, Z. Shen, A. Liu, Y. Weng Southeast Univ., China

----- Break -----

16:40 - 18:00

Room 131

FMC3: Display Optics

Chair: S. Suyama, Tokushima Univ., Japan
 Co-Chair: H. Yamamoto, Utsunomiya Univ., Japan

FMC3 - 1 **See-Through Aerial Secure Display with Head-Tracking Function**
 16:40

S. Ito, K. Uchida*, H. Yamamoto*,***
**Utsunomiya Univ., Japan*
***JST ACCEL, Japan*

FMC3 - 2 **Functional Projection Screen Using Diverted Corner
17:00** **Cube Retroreflector (D-CCR)**

R. Ohtera, K. Wako, Y. Ishitaka, M. Kano*, K. Kälântär**,
T. Uchida*

Nat. Inst. of Tech. Sendai College, Japan

**Tohoku Univ., Japan*

***Global Optical Solutions, Japan*

FMC3 - 3 **Curved Aerial Information Display by Use of a
17:20** **Half-Mirror-Coated Fresnel Lens**

K. Shimose, M. Yasugi, T. Iwane, M. Nakajima*,
H. Yamamoto*

Utsunomiya Univ., Japan

**Nikon, Japan*

FMC3 - 4 **Optical Characteristics and Metrology of Flexible
17:40** **Light Sources (FLS)**

K. Kälântär,**, S. Maeda**

**AIST, Japan*

***Global Optical Solutions, Japan*

Author Interviews

18:10 – 18:40

Thursday, December 13

9:00 - 10:20

Reception Hall 2

LCT4/FMC4: New Materials and Components for LCDs

Chair: S. Oka, Japan Display, Japan

Co-Chair: R. Yamaguchi, Akita Univ., Japan

LCT4/ **Invited The Application of Quantum Dot in TV
FMC4 - 1** **Display Technology**

9:00

N. Chen, H. Ji

TCL Elect. Holdings, China

LCT4/ **Invited Cholesteric Liquid Crystals As Solution-
FMC4 - 2** **Processable Holographic Optical Elements**

9:20

*H. Yoshida**, S. Cho*, M. Ono*, Y. Tsuboi*, Z. Fan*,
M. Ozaki**

**Osaka Univ., Japan*

***JST, Japan*

LCT4/ **Novel Black Photo Spacer Structure Applied in
FMC4 - 3** **Liquid Crystal Display Technology**

9:40

W. Cao, M. Liu, Z. Deng, Y. Lin, C. Chiu, C. Lee

Shenzhen China Star Optoelect. Tech., China

**LCT4/
FMC4 - 4** **New Reflective Polarizer Film for Automotive
e-Mirror Application**

10:00

*H. Matsuda, K. Toyooka, M. Kugue**

3M Japan Prods., Japan

**3M Japan, Japan*

Author Interviews

10:40 – 11:10

----- Lunch -----

14:20 - 16:50

Event Hall

Poster FMCp1: Display Optics (1)
Special Topics of Interest on AR/VR and Hyper Reality

**FMCp1 - 1 LED Authentication Using a Smartphone for Volume
Holograms**

T. Yasuda, Y. Yoshimura, T. Yamauchi

Dai Nippon Printing, Japan

14:20 - 16:50

Event Hall

Poster FMCp2: Display Optics (2)

**FMCp2 - 1 Fundamental Solutions of Interlaced Microstructures
for Photo-Electric Device and the Pseudo Negative
Refractive Index Modeling for Display Component**

C.-J. Ou, J.-F. Quan, K.-Y. Chen, Z.-W. Wang

Hsiuping Univ. of S&T, Taiwan

**FMCp2 - 2 Microstructure Film for Full Array Type Backlight
Unit**

F. Mukhtarov, Y. Nishida, D. Kim

Samsung Elect., Korea

FMCp2 - 3 The Process and Reliability of Mini-LED Displays

*I.-H. Hsieh, Y.-E. Wu, C.-H. Kuo, H.-H. Wu, Y.-W. Chang,
H.-P. Kuo, Y.-H. Chang, T.-L. Niu, C.-M. Yang, M.-T. Ho,
C. Fuh, Y.-W. Chen*

AU Optronics, Taiwan

14:20 - 16:50

Event Hall

Poster FMCp3: FPD Manufacturing Technologies

- FMCp3 - 1 Exposure Test Results of Organic Insulation Films with DUV Broadband Illumination for High Resolution Panels**
K. Takasaki, N. Izumi, M. Hakko, M. Ando, N. Yabu, K. Nagano
Canon, Japan
- FMCp3 - 2 Study on One Infrequent Influencing Factor of TFT Mask**
M. Wang, J. Liu, F. Li, Y. Jia, X. Ding, W. Chen
Beijing BOE Display Tech., China
- FMCp3 - 3 Acceptor Doping of ZnO Films by NO Gas Decomposition on a Heated Ir Wire Surface in a Catalytic Reaction-assisted CVD**
Y. Adachi, R. Iba, H. M. Abdul^{}, A. Kato, K. Yasui*
Nagaoka Univ. of Tech., Japan
^{*}*Univ. Tech. Malaysia, Malaysia*
- FMCp3 - 4 A Study and Improvement about Corrosion Mechanism of Mo/Cu Bilayer in Cleaning Process**
Y. Yin, J. Li, X. Hu, L. Cai, Q. Lin, X. Wei, J. Wang, J. Liu, C. Hu, S. Sun, W. Zhang
Shenzhen China Star Optoelect. Tech., China
- FMCp3 - 5 A Study and Improvement about Corrosion Mechanism of Mo/Cu Bilayer in CVD**
Y. Yin, J. Wang, J. Li, L. Cai, X. Wei, Q. Lin, J. Liu, C. Hu, S. Sun, W. Zhang
Shenzhen China Star Optoelect. Tech., China
- FMCp3 - 6 Four-Mask Process Architecture Using NH₃ Plasma Treatment Technology for Image Sticking Improvement in 32-in. TV Product**
F.-Y. Yang, A.-T. Cho, J. Hsu, Z. Liu, K.-J. Liu, W. Chen, Y. Lu
Chongqing HKC Optoelect. Tech., China
- FMCp3 - 7 Optimization Design of Silicone PAD for Bended Window Lamination in the OLED Display**
D.-H. Jang, S.-W. Lim, K.-Y. Han
Dankook Univ., Korea

14:20 - 16:50

Event Hall

Poster FMCp4: FPD Materials and Components

- FMCp4 - 1** **Expansion into Optical Applications of Adhesion Tunable PSA**
K. Kataoka, T. Nakano, S. Sasaki, K. Hayashi
Nitto Denko, Japan
- FMCp4 - 2** **A Novel Liquid Crystal Displays Using Dye-Type In-Cell Polarizer**
Z. Chen, L. Chen, H.-H. Chen
Shenzhen China Star Optoelect. Tech., China
- FMCp4 - 3** **A Novel High Retardation Polymer Film for Organic Light Emitting Displays**
K. Murakami^{,**}, Y. Koike^{*,**}*
^{*}*Keio Univ., Japan*
^{**}*Keio Photonics Res. Inst., Japan*
- FMCp4 - 4** **Reduction of Charge Trapping in High-k HfZrO₄ Gate Insulators**
A. Park, B. Choi
Sungkyunkwan Univ., Korea

14:20 - 16:50

Event Hall

Poster FMCp5: WCG Color Filter
Special Topics of Interest on Wide Color Gamut and Color Reproduction

- FMCp5 - 1** **Wide Gamut Display Using Red Color Filter- Technical Developments and Actual Products**
D. Lee, S. J. Yang, J. Y. Lee, Y. W. Kim, H. J. Kim
LG Chem., Korea

Reception

Wednesday evening

Dec. 12, 2018

19:00 – 21:00

Atsutajingu Kaikan, Atsuta Shrine
 (1F, North Building)

Atsutajingu Kaikan is located 2.3km away from Nagoya Congress Center, approx. 10min. by car.

See page 14 for details

17:10 - 18:30

Room 131

FMC5: Manufacturing

Chair: T. Nonaka, Merck PM, Japan
 Co-Chair: Y. Inoue, Corning Japan, Japan

**FMC5 - 1
17:10 The Effect of Flash Lamp Annealing on the Performance of MOTFTs**

*M. Jungphaehnel, T. Preussner, J. Westphalen
 Fraunhofer Inst. for Organic Elect., Germany*

**FMC5 - 2
17:30 Novel High Resolution Photolithography Process (Resolution Enhancement Technology)**

*H. Ikeda, T. Suzuki, Y. Toyama, T. Nonaka
 Merck PM, Japan*

**FMC5 - 3
17:50 Copper Undercut Mechanism Due to Side-Etch of Dry Process in Four-Mask Fabrication for High Resolution TFT-LCDs**

*M. Chen, L. Guo, C.-Y. Chiou, Z.-W. Tan, S. Sun, H. Xia,
 F. Long, W.-G. Liu, J.-X. Li
 Shenzhen China Star Optoelect. Tech., China*

**FMC5 - 4
18:10 Mass-production-feasible Three-Mask Technology for HVA-LCD TV**

*M.-X. Zhu, H.-Y. Xu, Z.-X. Jiang, T. Ou, S.-J. Chen,
 C.-Y. Lee, H.-C. Lin
 China Star Optoelect. Tech., China*

Author Interviews

18:40 – 19:10

Friday, December 14

9:00 - 10:20

Room 131

FMC6: Light Polarizing Technologies

Chair: I. Amimori, A51Tech, Japan
 Co-Chair: S. Namekawa, Nippon Steel & Sumikin Chem., Japan

**FMC6 - 1
9:00 *Invited* Design, Synthesis and Optical Properties of Chiral Polymers Emitting Efficient Circularly Polarized Light as OLED Materials**

*T. Nakano
 Hokkaido Univ., Japan*

FMC6 - 2 **Invited** **Chiral Intertwined Spirals and Chiroptical Properties Dictated by Cylinder Helicity: the Most Intense Circularly Polarized Luminescence in Organic Compounds**
9:20

S. Sato^{*,**}

^{*}*Univ. of Tokyo, Japan*

^{**}*JST, Japan*

FMC6 - 3 **Influence of Packaging Materials to Nano-wire Grating Polarization Characteristics**
9:40

H. Jun

Shenzhen China Star Optoelect. Semiconductor Display Tech., China

FMC6 - 4 **Proposal of Novel Random Polarization Film (RPF) with Birefringent Crystals for Real-Color Displays**
10:00

M. Udono^{*,**}, *Y. Koike*^{*,**}

^{*}*Keio Univ., Japan*

^{**}*Keio Photonics Res. Inst., Japan*

----- Break -----

10:40 - 12:00

Reception Hall 2

FLX5/FMC7: Advanced Materials and Components for Flexible Electronics

Chair: *T. Furukawa, Yamagata Univ., Japan*

Co-Chair: *A. Fujita, JNC, Japan*

FLX5/ **Thin and High-Quality ITO/Ag Alloy/ITO Structure for Display Electrodes**
FMC7 - 1

10:40

Y. Toshimori, S. Nonaka, T. Nagase

Mitsubishi Materials, Japan

FLX5/ **Improvement of Mura and CD by Adjusting Black Matrix Component in G8.6 TFT-LCD Color Filter**
FMC7 - 2

11:00

R. Wang, D. Zhang, D. Lei, X. Wang, J. Hung, J. Hsu, W. Chen, Y. Lu

Chongqing HKC Optoelect. Tech., China

FLX5/ **Black Photoresist Achieving Patterns with Extremely Low Reflection and Smooth Line Edge on Flexible Substrate**
FMC7 - 3

11:20

A. Igawa, M.-A. Hsu^{*}

eChem Solutions Japan, Japan

^{*}*Consistent Elect. Materials, Taiwan*

**FLX5/
FMC7 - 4
11:40** **The Effects of Surfactants and Dielectrophoresis on
the Electrical Property of Single-Wall Carbon
Nanotube Films**

C. Wei, Z.-L. Yan

Tatung Univ., Taiwan

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

Room 131

FMC8: Advanced Materials

Chair: T. Tomono, Toppan Printing, Japan

Co-Chair: M. Arai, ULVAC, Japan

**FMC8 - 1
13:10** **Thin Cycloolefin Polymer Film with Low Ultraviolet
Transmittance**

*Y. Hata, K. Inoue, N. Murata, H. Nakahori, S. Yamada
Zeon, Japan*

**FMC8 - 2
13:30** **High Transmittance and Photopatternable High-k
Insulating Film**

*C.-Y. Tung, S.-C. Lee, T.-H. Liao, W.-S. Yu, M.-W. Shen,
W.-C. Tsai
AU Optronics, Taiwan*

**FMC8 - 3
13:50** **A Study and Estimate Method about Mo and MoTi
Barrier Endurance for Cu Diffusion**

*X. Hu, Z. Li, Y. Yibiao, Y. Zhai, J. Li, W. Cao, W. Huang, H. Yu,
J. Zhang, T. Sun, J. Chang
Shenzhen China Star Optoelect. Tech., China*

**FMC8 - 4
14:10** **The Research Focusing on Form Mechanism and
Ameliorated Methods of Aluminum Thorn Grown on
Gate Electrode Constructed Al/Mo Bi-layer**

*J. Wang, Y. Yin, J. Li, X. Wei, L. Cai, Q. Lin, J. Liu, C. Hu,
S. Sun, W. Zhang
Shenzhen China Star Optoelect. Tech., China*

Author Interviews

16:20 – 16:50

Supporting Organizations:

The Japanese Society of Printing Science and Technology

Japan Society of Colour Material

The Technical Association of Photopolymers, Japan

The Society of Photography and Imaging of Japan

RadTech Japan

The Japanese Research Association for Organic Electronics
Materials

Japan Electronics Packaging and Circuits Association

Workshop on Inorganic Emissive Display and Phosphors

Thursday, December 13

10:40 - 13:10

Event Hall

Poster PHp1: QD Phosphors and Devices
Special Topics of Interest on Quantum Dot Technologies

- PHp1 - 1** **Status and Trends of Patenting Activity for Electroluminescent Quantum Dots**
P. Mukish, Z. Bouhamri, E. Virey
Yole Développement, France
- PHp1 - 2** **Thermal Stability of CsPbBr₃ Quantum Dots and Their Application to Light-Emitting Diodes**
H. Sasaki, N. Kamata, Z. Honda
Saitama Univ., Japan
- PHp1 - 3** **Enhancement of Optical and Electrical Properties of Methyl Ammonium Lead Bromide Perovskite Quantum Dot with Thiol Ligand Exchange**
H. Cho, H. Zou, S. Park, D. Y. Jeon
KAIST, Korea
- PHp1 - 4** **Quantum Dots Emissive Layer in QD-LED by Chemical Bonding with Electron Transport Layer**
H. Shin, H. Cho, W. Choi, D. Y. Jeon
KAIST, Korea

10:40 - 13:10

Event Hall

Poster PHp2: Phosphors for General

- PHp2 - 1** **Automated Technological Design of the Thin Film Electroluminescent Indicating Devices**
D. Evsevichev
Ulyanovsk Civil Aviation Inst., Russia

Final Program

The final program of IDW '18 will be available
on the website (<http://www.idw.or.jp/>)
from the middle of November

17:10 - 18:40

Room 432

PH1: Phosphors for Display and Lighting Applications

Chair: D. Y. Jeon, KAIST, Korea
 Co-Chair: K. Ohmi, Tottori Univ., Japan

PH1 - 1 **Invited Development of Nanocolumn LEDs for Monolithic Micro-LED Display**

17:10

K. Kishino
Sophia Univ., Japan

PH1 - 2 **Invited Self-healing Phosphor: New Paradigm for High-Power LED Lighting**

17:35

W. B. Im, Y. H. Kim, H. B. Cho
Chonnam Nat. Univ., Korea

PH1 - 3 **La₃Si₆N₁₁:Ce Phosphor-in-Glass Film: A Novel Nitride Color Converter for High-Brightness Laser-Driven Automotive Lighting and Display**

18:00

S. You, S. Li, P. Zheng, T. Zhou, R.-J. Xie
Xiamen Univ., China

PH1 - 4 **Achieving Efficient β -Sialon:Eu Phosphors for High-Brightness LCD Backlights by Reducing the Eu³⁺ Luminescence Killer**

18:20

S. Li, T. Takeda, N. Hirotsuki*, R.-J. Xie*
Xiamen Univ., China
 *NIMS, Japan

Author Interviews

18:40 – 19:10

3DSA 2018The 10th International Conference on 3D Systems and Applications

Taipei World Trade Center

Nangang Exhibition Hall

Taipei, Taiwan

Aug. 29 – 30, 2018

<http://cf.tl.ntu.edu.tw/web/2018/3dsa2018/index.php>

Friday, December 14

10:40 - 12:00

Room 432

PH2/OLED6: QD Phosphors and Devices***Special Topics of Interest on Quantum Dot Technologies***

Chair: R.-J. Xie, Xiamen Univ., China

Co-Chair: Y. Sakai, Mitsubishi Chem., Japan

**PH2/
OLED6 - 1
10:40** ***Invited* Narrow Band-Edge Emission from AgInS₂
Semiconductor Quantum Dots by the Formation of
Amorphous III-VI Semiconductor Shells**

*T. Uematsu**Osaka Univ., Japan*

**PH2/
OLED6 - 2
11:00** **Novel Ligand Materials to Enhance Luminous
Efficiency and Stability of Perovskite Quantum Dot**

S.-Y. Cheng, C.-T. Chiu, J.-T. Lian, B.-K. Hsu, T.-Y. Lin***Chunghwa Picture Tubes, Taiwan***Nat. Taiwan Ocean Univ., Taiwan*

**PH2/
OLED6 - 3
11:20** **Highly Stable CsPbI₃ Perovskite QDs for Light-
Emitting Diodes**

*Y. Cai, Y. Li, R.-J. Xie**Xiamen Univ., China*

**PH2/
OLED6 - 4
11:40** **Alkali Metal Carbonate Doped Metal Oxide Electron
Transporting Layer for Highly Efficient Quantum-Dot
Light Emitting Diodes**

*Y. Lee, H.-M. Kim, J. Kim, J. Jang**Kyung Hee Univ., Korea***Author Interviews**

12:00 – 12:30

----- Lunch -----

Supporting Organizations:

The 125th Research Committee on Mutual Conversion between Light
and Electricity, Japan Society for Promotion of Science
Phosphor Research Society, The Electrochemical Society of Japan

IMID 2018

Aug. 28 – 31, 2018

BEXCO

Busan, Korea

<http://www.imid.or.kr/2018/>

Workshop on OLED Displays and Related Technologies

Wednesday, December 12

13:20 - 14:40

International Conference Room

OLED1: OLED Materials

Chair: T. Komatsu, JOLED, Japan

Co-Chair: T. Ikuta, JNC, Japan

OLED1 - 1 *Invited* High Performance Blue OLED by New Fluorescent Materials

13:20

Y. Nakano, T. Masuda, S. Tasaki, Y. Takahashi, H. Ito, T. Haketa, K. Okinaka, E. Kambe, Y. Kawamura, H. Kuma Idemitsu Kosan, Japan

OLED1 - 2 *Invited* High Efficiency and Low Efficiency Roll-off Deep Blue TADF Emitter

13:40

D. H. Ahn, S. W. Kim, H. Lee, J. Y. Lee, J. H. Kwon Kyung Hee Univ., Korea

OLED1 - 3 Phosphorescent OLED Technologies with Breakthrough Spectral Emission for Automotive Lighting Applications

14:00

E. A. Margulies, P.-L. Boudreault, M. S. Weaver, J. J. Brown Universal Display, USA

OLED1 - 4 *Invited* Outcoupling Enhancement by Organic Materials Inside OLEDs: Control of Molecular Orientation and Refractive Index

14:20

D. Yokoyama Yamagata Univ., Japan

----- Break -----

15:00 - 16:20

International Conference Room

OLED2: OLED Devices

Chair: T. Uchida, Tokyo Polytechnic Univ., Japan

Co-Chair: K. Kishino, Sony, Japan

OLED2 - 1 *Invited* Recent Progress in Air-Stable Inverted OLEDs: Key Materials, Fabrication Process and Application to Flexible Display

15:00

H. Fukagawa, T. Sasaki, T. Oono, T. Shimizu NHK, Japan

OLED2 - 2 **Dark Spot Growth and its Acceleration Factor in Organic Light-Emitting Diodes with Single or Multilayered Barrier Structure**
15:20

T. Okada, A. Yoshida, T. Tsuji

Pioneer, Japan

OLED2 - 3 **Single Emissive Hybrid White Organic Light-Emitting Diodes with Ultrathin Blue Fluorescent Emitting Layer**
15:40

G. J. Yun^{}, S. I. Lee^{*}, F. Zhu^{***}, S. E. Lee^{****}, Y. K. Kim^{****}, W. Y. Kim^{***}*

^{}Hoseo Univ. of Elect., Korea*

*^{**}McMaster Univ., Canada*

*^{***}Hong Kong Baptist Univ., Hong Kong*

*^{****}Hongik Univ., Korea*

OLED2 - 4 **Comparison of Multi Optical Simulation Methods for the Functional Color Layer**
16:00

W. Kim, S. Lee, S. Kim, Y. Kim, M. Kwak, M. Jun, I. Kang

LG Display, Korea

----- Break -----

16:40 - 18:00

International Conference Room

OLED3: OLED Soluble Materials and Process Technologies

Chair: *K. Nakayama, Osaka Univ., Japan*

Co-Chair: *T. Tsuji, Pioneer, Japan*

OLED3 - 1 ***Invited* Fundamentals and Device Performance of Polymer-OLED Materials**
16:40

N. Akino, Y. Tsubata, D. Fukushima, S. Tanaka

Sumitomo Chem., Japan

OLED3 - 2 ***Invited* Ink-Jet Printed OLEDs for Display Applications**
17:00

S. Stolz, K. M. Scheible, S. Meyer, A. Hayer, P. Hibon,

M. Engel, R. Linge, B. Burkhart, N. Koenen,

M. Hamburger, G. Bealle, H.-R. Tseng,

M. Wucherer-Plietker, E. Böhm, G. Bernatz, R. Anem

Merck KGaA, Germany

OLED3 - 3 ***Invited* Important Technologies of Inkjet Printer and VF Unit for OLED Display Fabrication**
17:20

T. Hayashi, A. Shimamura, Y. Konta, K. Oshima

Tokyo Electron Kyushu, Japan

**OLED3 - 4 Matrix Quantum Dot Light-Emitting Diodes
17:40 Patterned by Photolithography Technology**

C.-T. Chiu, S.-Y. Cheng, J.-T. Lian

Chunghwa Picture Tubes, Taiwan

Author Interviews

18:10 – 18:40

Thursday, December 13

9:00 - 10:20

International Conference Room

OLED4: OLED Display

Chair: Y. Kijima, Huawei Techs. Japan, Japan

Co-Chair: H. Kuma, Idemitsu, Japan

OLED4 - 1 Invited High Performance OLED and Its Application

9:00

*T. Kim, K. Song, J. Kim, J. Park, H. Choi, K. Kim, C. Han,
H. Choi, I. Kang*

LG Display, Korea

OLED4 - 2 Invited 4032ppi High-Resolution OLED Microdisplay

9:20

*T. Fujii, C. Kon, Y. Motoyama, K. Shimizu, T. Shimayama,
T. Yamazaki*, T. Kato*, S. Sakai**, K. Hashikaki**,
K. Tanaka***, Y. Nakano****

Sony Semiconductor Solutions, Japan

**Sony, Japan*

***Sony LSI Design, Japan*

****Sony Semiconductor Manufacturing, Japan*

**OLED4 - 3 High Transmission Opening Active Matrix OLED
9:40 Display**

*M. Adachi, Y. Matsumoto, Y. Kimura, M. Gunji, H. Kato,
T. Nakanishi, A. Hasegawa, H. Tabatake*

Japan Display, Japan

OLED4 - 4 Influence of Power VDD IR Drop on Picture Quality

10:00

B. Lei, Y. Zheng, Y. Ma, P. Dang, Z. Duan

Visionox Tech., China

Author Interviews

10:40 – 11:10

10:40 - 13:10

Event Hall

Poster OLEDp1: OLED Poster

- OLEDp1 - 1 Blue Fluorescence Organic Light-Emitting Diode with Novel Anthracene Derivatives**
T.-L. Chiu, C.-H. Chen^{}, B.-A. Fan^{*}, J.-H. Lee^{*}, L.-J. Ho^{*}, M.-K. Leung^{*}*
Yuan Ze Univ., Taiwan
^{}Nat. Taiwan Univ., Taiwan*
- OLEDp1 - 2 Optical Analysis of Circularly Polarized Emission in Surface-Treated Mesogenic Conjugate Polymer**
D.-M. Lee, B.-J. Kang, J.-H. Woo, C.-J. Yu, J.-H. Kim
Hanyang Univ., Korea
- OLEDp1 - 3 An Excellent Performance of Pixel Definition Layer Effects on High Quality OLED Devices Fabricated by Inkjet Printing Process**
K.-P. He, X.-X. Zhang, J. Tang, J.-S. Im
Shenzhen China Star Optoelect. Tech., China
- OLEDp1 - 4 Highly-Efficient and Low Quantum Efficiency Roll-off Solution-processed Blue Organic Light-Emitting Diodes for Display Application**
R. A. K. Yadav, W.-Y. Yang, V. Joseph^{}, D. K. Dubey, K. R. J. Thomas^{*}, J.-H. Jou*
Nat. Tsing Hua Univ., Taiwan
^{}Indian Inst. of Tech., India*
- OLEDp1 - 5 Nickel Oxide Nano-Particles Replacing of Hole Injection Layer in Organic Light-Emitting Diodes**
S. Lee^{}, G. Yun^{*}, A. Turak^{**}, W. Kim^{*,**}*
^{}Hoseo Univ., Korea*
*^{**}McMaster Univ., Canada*
- OLEDp1 - 6 MoO₃ Nanoparticle Doped NiO_x As a Hole Injection Layer for OLEDs**
M. Kim, M. S. Cho, Y. S. Jung, D. Y. Jeon
KAIST, Korea
- OLEDp1 - 7 Designing Micro-Lens Structure for Enhancing the External Quantum Efficiency of OLED Device**
D. Lee, J.-W. Yoo, S.-J. Park, J.-K. Song
Sungkyunkwan Univ., Korea

OLEDp1 - 8 Reliability Improvement of Organic Light-Emitting Diodes Using Organic/Inorganic Hybrid Nanocomposite Passivation Film with Good Surface Hardness

B.-M. Park, H. J. Chang, K.-Y. Han

Dankook Univ., Korea

OLEDp1 - 9 AMOLED Linear Crosstalk Failure Analysis and Improvement

Y. Zheng, B. Lei, P. Dang, J. Cheng, Z. Duan, X. Zhu, X. Huang

Visionox Tech., China

OLEDp1 - 10 Techniques to Achieve 814PPI in AMOLED Display for Virtual Reality

Q. Liu, L. Zhang, S. Hu, H. Zhu, X. Zhu

Kunshan Govisionox Optoelect., China

10:40 - 13:10

Event Hall

Poster OLEDp2: OLED/QDT Poster
Special Topics of Interest on Quantum Dot Technologies

OLEDp2 - 1 Efficiency Improvement of Quantum Dot Light Emitting Diode by Using DMSO Treated PEDOT: PSS

T. J. Bae, S. H. Song, S. J. Park, S. S. Kim, J. K. Song

Sungkyunkwan Univ., Korea

OLEDp2 - 2 Organic Electron Transport Layer for High Performance Green Inverted Quantum Dot Light Emitting Diodes

C. Y. Lee, H. W. Bae, K. J. Eun, N. N. Mude, J. H. Kwon

Kyung Hee Univ., Korea

EXHIBITION

12:00 – 18:00 Wednesday, Dec. 12

10:00 – 18:00 Thursday, Dec. 13

10:00 – 14:00 Friday, Dec. 14

Event Hall (1F, Building 1)

Nagoya Congress Center

Free admission with your registration name tag

Friday, December 14

9:00 - 10:20

Room 432

OLED5: OLED Device Technology
Special Topics of Interest on Quantum Dot Technologies

Chair: T. Wakimoto, Merck PM, Japan

Co-Chair: T. Shimizu, NHK, Japan

**OLED5 - 1 *Invited* Monochromatic LEDs Based on Perovskite
 9:00 Quantum Dots: Opportunities and Challenges**

*C.-J. Shih, S. Kumar, J. Jagielski**ETH Zurich, Switzerland*

**OLED5 - 2 Negative Capacitance as a Diagnostic Tool for
 9:20 Recombination in Purple Quantum Dot LEDs**

C. Blauth^{,**}, T. Hirai^{**}, P. Mulvaney^{*}**^{*}Univ. of Melbourne, Australia**^{**}CSIRO Manufacturing, Australia*

**OLED5 - 3 Dual Cation Perovskite Light Emitting Diode with
 9:40 Multi-Stacking Layers**

*W. C. Choi, A. Kanwat, J. Jang**Kyung Hee Univ., Korea*

**OLED5 - 4 High-Performance, Solution-Processed Quantum
 10:00 Dots Hybrid Light-Emitting Field-Effect Transistors**

*P. He, L. Lan, J. Peng**South China Univ. of Tech., China*

----- Break -----

10:40 - 12:00

Room 432

PH2/OLED6: QD Phosphors and Devices
Special Topics of Interest on Quantum Dot Technologies

Chair: R.-J. Xie, Xiamen Univ., China

Co-Chair: Y. Sakai, Mitsubishi Chem., Japan

**PH2/
 OLED6 - 1 *Invited* Narrow Band-Edge Emission from AgInS₂
 10:40 Semiconductor Quantum Dots by the Formation of
 Amorphous III-VI Semiconductor Shells**

*T. Uematsu**Osaka Univ., Japan*

**PH2/
 OLED6 - 2 Novel Ligand Materials to Enhance Luminous
 11:00 Efficiency and Stability of Perovskite Quantum Dot**

S.-Y. Cheng, C.-T. Chiu, J.-T. Lian, B.-K. Hsu^{}, T.-Y. Lin^{*}**Chunghwa Picture Tubes, Taiwan**^{*}Nat. Taiwan Ocean Univ., Taiwan*

PH2/
OLED6 - 3
11:20

Highly Stable CsPbI₃ Perovskite QDs for Light-Emitting Diodes

*Y. Cai, Y. Li, R.-J. Xie
Xiamen Univ., China*

PH2/
OLED6 - 4
11:40

Alkali Metal Carbonate Doped Metal Oxide Electron Transporting Layer for Highly Efficient Quantum-Dot Light Emitting Diodes

*Y. Lee, H.-M. Kim, J. Kim, J. Jang
Kyung Hee Univ., Korea*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:10

Room 133

OLED7: OLED Advanced Technology

Chair: M. Adachi, Japan Display, Japan

Co-Chair: S. Aratani, Samsung Elect., Korea

OLED7 - 1
13:10

Study of Viewing Angle on Fluorescence Dye Photo Resist for OLED Display

*S. Kim, S. Lee, W. Kim, Y. Kim, M. Kwak, M. Jun, I. Kang
LG Display, Korea*

OLED7 - 2
13:30

High Transparency and High Reliability Transparent Cathode Fabricated by Thermal Evaporation for Transparent OLED Application

*M.-G. Song, J. E. Yeom, K.-S. Kim, J. H. Kwon
Kyung Hee Univ., Korea*

OLED7 - 3
13:50

High Reliability Flexible Device with Atomic Layers Deposition Layers

*G. T. Fu, L. Rui, W. Kan, N. Jing, W. J. Yuan, L. J. Jia,
B. Y. Mei, H. Jing, H. H. Lun
Wuhan China Star Optoelect. Semiconductor Display
Tech., China*

----- Break -----

Author Interviews

16:20 – 16:50

Supporting Organizations:

The Japanese Society of Printing Science and Technology
The Society of Photography and Imaging of Japan

Workshop on 3D/Hyper-Realistic Displays and Systems

Wednesday, December 12

15:00 - 16:20

Room 222

3D1: Display Systems for AR

Special Topics of Interest on AR/VR and Hyper Reality

Chair: S. Yano, Shimane Univ., Japan

Co-Chair: D. Mikami, NTT, Japan

3D1 - 1 **Invited The Optimization of a Light-Field Holographic Projection System**

15:00

*C.-Y. Chen, C.-H. Chuang**

Nat. Taiwan Univ. of S&T, Taiwan

**Nat. Taiwan Univ., Taiwan*

3D1 - 2 **Large-Size and See-Through Color Light Field Display Using Projector and DDHOE**

15:20

J. B. Jessie, L. Jorissen, R. Oi, K. Wakunami, Y. Ichihashi, M. Okui, K. Yamamoto*

NICT, Japan

**Hasselt Univ., Belgium*

3D1 - 3 **Geometric Phase Doublet Lens for Augmented Reality**

15:40

C.-K. Lee, W. Seo, G. Sung, S. Kim, B. Shin, Y.-T. Kim, J. Seo, J.-S. Chung, J. An, H. Song, Y. Kim, H. Kim, C.-S. Choi, Y. Kim, K. Won, S.-H. Lee, M. Jeon, H.-S. Lee, D. Lee

Samsung Elect., Korea

3D1 - 4 **A Simulation Platform to Convert Viewing Geometry of a Transparent Display for AR Applications**

16:00

Y.-M. Chen, P.-L. Sun, C.-J. Li, H.-Y. Chen**

Nat. Taiwan Univ. of S&T, Taiwan

**ITRI, Taiwan*

----- Break -----

16:40 - 18:00

Room 222

3D2/DES1: Novel Display Systems
Special Topics of Interest on AR/VR and Hyper Reality

Chair: C.-Y. Chen, Nat. Taiwan Univ. of S&T, Taiwan
 Co-Chair: Y. Oyamada, Tottori Univ., Japan

3D2/DES1 - 1 ***Invited* Hidden Stereo: Synthesizing Ghost-Free Stereoscopic Images for Viewers without 3D Glasses**
 16:40

T. Fukiage, T. Kawabe, S. Nishida
NTT, Japan

3D2/DES1 - 2 ***Invited* Extended Imagery Training for Baseball Batting through High-Reality Virtual Space Using Head Mounted Display**
 17:00

D. Mikami
NTT, Japan

3D2/DES1 - 3 ***Invited* An Interactive Fog Display to Express Adaptive Shape-Changing Flow**
 17:20

*T. Koga, K. Otao**
Nat. Inst. of Tech., Tokuyama College, Japan
**Univ. of Tsukuba, Japan*

3D2/DES1 - 4 **A Miniaturized Multi-Layered Display System with Water Drops**
 17:40

Y.-A. Kuo, Z.-W. Wang, H.-W. Chen, W.-C. Hsu, C.-Y. Chen*
Nat. Taiwan Univ. of S&T, Taiwan
**Bruvis Multi Media Creative, Taiwan*

Author Interviews

18:10 – 18:40

Thursday, December 13

14:20 - 16:50

Event Hall

***Poster* 3Dp1: 3D/Hyper-Realistic Display Systems**

3Dp1 - 1 **Distortion Correction of Point-Cloud Object for Projection-Type Holographic Display Based on HOE Screen**

H. Amano^{,**}, Y. Ichihashi^{**}, T. Kakue^{*}, K. Wakunami^{*,**}*
H. Hashimoto^{,**}, T. Shimobaba^{*}, T. Ito^{*}*

**Chiba Univ., Japan*
***NICT, Japan*

- 3Dp1 - 2** **Acceleration of Hologram Calculation by Background Subtraction for Three-Dimensional Reconstruction of Moving Objects in Real Scene**
H. Yanagihara, T. Kakue, T. Shimobaba, T. Ito
Chiba Univ., Japan
- 3Dp1 - 3** **Expansion of Viewing Window for Projection-Type Holographic Display Based on HOE Screen**
H. Hashimoto^{,**}, Y. Ichihashi^{**}, T. Kakue^{*}, K. Wakunami^{**}, H. Amano^{*,**}, T. Shimobaba^{*}, T. Ito^{*}*
^{}Chiba Univ., Japan*
*^{**}NICT, Japan*
- 3Dp1 - 4** **3D Holographic Display with Controllable Depth of Field Based on Complex Amplitude Modulation**
T. Zhang, Y. Pang, J. Xia
Southeast Univ., China
- 3Dp1 - 5** **A Flexible Pipeline from a Single-View Camera to a Stacked-Layer Light-Field Display**
T. Hidaka, K. Maruyama, T. Fujiwara, K. Takahashi, T. Fujii
Nagoya Univ., Japan
- 3Dp1 - 6** **Implementation of Table-Top Light Field Display with Stacked Layers**
K. Maruyama, H. Kojima, K. Takahashi, T. Fujii
Nagoya Univ., Japan
- 3Dp1 - 7** **Development of Prototype of 36-in. Interactive Tabletop Display System**
W. Jang, H. Shim, D. Lee, J. Park, S. K. Yoon, H. Kim, S. Chun
Korea Photonics Tech. Inst., Korea
- 3Dp1 - 8** **Increasing Far Depth Perception by Using Far Stimuli Display in Head Mounted Display**
Y. Abiko, S. Suyama, H. Mizushina
Tokushima Univ., Japan
- 3Dp1 - 9** **Very Small Disparity Required for Large Depth Perception by Monocular Motion Parallax in DFD Display**
K. Okamoto, H. Mizushina, S. Suyama
Tokushima Univ., Japan

- 3Dp1 - 10** **Fast Response Time for Image Depth Fusion in DFD Display**
A. Nogami, H. Mizushina, S. Suyama
Tokushima Univ., Japan
- 3Dp1 - 11** **Depth Perception Difference by Changing Short Display Time from Long Viewing Distance in Non-Overlapped DFD (Depth-Fused 3D) Display**
S. Mukaeyama, H. Mizushina, S. Suyama
Tokushima Univ., Japan
- 3Dp1 - 12** **Changing Direction of Stimulus Motion, Not Temporal Stopping, Improves Depth Perception from Monocular Motion Parallax**
Y. Masuda, I. Kanayama, S. Suyama, H. Mizushina
Tokushima Univ., Japan
- 3Dp1 - 13** **Perceived Depth of Aerial Protruding Depth-Fused 3D Display**
Y. Terashima, S. Suyama^{}, H. Yamamoto*
Utsunomiya Univ., Japan
^{}Tokushima Univ., Japan*
- 3Dp1 - 14** **Evaluation of Radially Patterned Dihedral Corner Reflector Array for Wide Viewing Angle of Floating Image without Virtual Image**
Y. Yoshimizu, E. Iwase
Waseda Univ., Japan
- 3Dp1 - 15** **Forming Aerial Images at the Center of Triangular Container by Using Polarized Aerial Imaging by Retro-Reflection (pAIRR)**
M. Yasugi^{,**}, H. Yamamoto^{*,**}*
^{}Utsunomiya Univ., Japan*
*^{**}JST ACCEL, Japan*
- 3Dp1 - 16** **Proposal of an Aerial Image that Reduces Apparent Blurring for Long Distance**
R. Kakinuma^{}, K. Shimose^{*}, H. Yamamoto^{*,**}*
^{}Utsunomiya Univ., Japan*
*^{**}JST ACCEL, Japan*
- 3Dp1 - 17** **Multi-Modal Underwater Information Display in Combination of Speakers and an Underwater Screen with by AIRR**
K. Fujii^{}, H. Yamamoto^{*,**}*
^{}Utsunomiya Univ., Japan*
*^{**}JST ACCEL, Japan*

14:20 - 16:50

Event Hall

Poster 3Dp2: Projection Display Systems
Special Topics of Interest on AR/VR and Hyper Reality

- 3Dp2 - 1** **Development of 35-in. Tabletop Display with Wide Viewing Angle Using Projection-Based Light Field Display Technology**
H. Shim, W. Jang, D. Lee, J. Park, S. Yoon
Korea Photonics Tech. Inst., Korea
- 3Dp2 - 2** **Realization of an Augmented Reality Display Operated with a Tunable Liquid Lens and 3D Integral Imaging**
P.-K. Sung, C.-W. Chien, C.-Y. Chien, C.-R. Sheu
Nat. Cheng Kung Univ., Taiwan
- 3Dp2 - 3** **Forming Aerial Omnidirectional Transparent Information Screen**
E. Abe^{}, H. Yamamoto^{*,**}*
^{*}*Utsunomiya Univ., Japan*
^{**}*JST ACCEL, Japan*
- 3Dp2 - 4** **A Waveguide See-Through Display System Based on a Holographic Lens**
*S.-K. Zhou^{**,}, W.-K. Lin^{*,**}, B.-S. Lin^{*}, W.-C. Su^{**}*
^{*}*Nat. Chiao Tung Univ., Taiwan*
^{**}*Nat. Changhua Univ. of Education, Taiwan*

14:20 - 16:50

Event Hall

Poster VHFp6/3Dp3: Applied Vision and Human Factors
- Human Factors of AR/VR
Special Topics of Interest on AR/VR and Hyper Reality

- VHFp6/3Dp3 - 1** **Study on Subjective Depth Evaluation for Holographic Head-Mounted Display**
H. Kubo, Y. Oguro, Y. Sakamoto
Hokkaido Univ., Japan
- VHFp6/3Dp3 - 2** **Study on Correction of Field Curvature in Head-Mounted Display Using Electro-Holography**
Y. Oguro, H. Kubo, Y. Sakamoto
Hokkaido Univ., Japan

17:10 - 18:30

Room 222

3D3: Autostereoscopic Display Systems

Chair: M. Yamaguchi, Tokyo Tech, Japan

Co-Chair: K. Takahashi, Nagoya Univ., Japan

3D3 - 1 Invited Time-Division Multiplexing Parallax Barrier System for Interactive 3D Visualization

17:10

*H. Kakeya**Univ. of Tsukuba, Japan***3D3 - 2 Realization of Deep Viewing Zone with Adaptive Time-Division Multiplexing Parallax Barrier**

17:30

*A. Hayashishita, H. Kakeya**Univ. of Tsukuba, Japan***3D3 - 3 Integral Photography Images by Plants**

17:50

J.-H. Kang^{,**}, Y. J. Hwang^{*}, B.-K. Ju^{**}, M.-C. Park^{*,***}, S. Yano^{****}**^{*}KIST, Korea**^{**}Korea Univ., Korea**^{***}Univ. of S&T, Korea**^{****}Shimane Univ., Japan***3D3 - 4 A Novel Eye Tracking System to Expand Viewing Area in All Directions for Glasses-Free 3D Display Displayable in Both Portrait and Landscape Modes**

18:10

H. Nakamura, G. Hamagishi, K. Yoshimoto, H. Takahashi, T. Matsumoto^{}, K. Kusafuka^{*}**Osaka City Univ., Japan**^{*}Kyocera, Japan***Author Interviews**

18:40 – 19:10

Friday, December 14

9:00 - 10:05

Room 222

VHF5/3D4: Human Factors and Image Quality

Chair: S. Uehara, AGC, Japan

Co-Chair: H. Mizushima, Tokushima Univ., Japan

VHF5/3D4 - 1 Invited Simulation of Slanted Color Moirés in IP-Type 3-D Displays

9:00

H. Lee^{,**}, J. Kim^{**}, S Yano^{*}, J.-Y. Son^{**}**^{*}Shimane Univ., Japan**^{**}Konyang Univ., Korea*

VHF5/
3D4 - 2
9:25

Depth of Field Widening with Increasing Number of Image Projected to Viewers' Eyes

J.-Y. Son^{}, H. Lee^{*,**}, B.-R. Lee^{***}, W. Son^{***}, S. Yano^{**}*

^{}Konyang Univ., Korea*

*^{**}Shimane Univ., Japan*

*^{***}ETRI, Korea*

VHF5/
3D4 - 3
9:45

Color Breakup Visibility Thresholds for Field Sequential Color Displays

P. Wang, Y. Zhang, J. Wang

Southeast Univ., China

----- Break -----

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

Room 222

**3D5/DES4: Display Systems for Automotive
Special Topics of Interest on Automotive Displays**

Chair: K. Morita, Chuo Univ., Japan

Co-Chair: H. Yamamoto, Utsunomiya Univ., Japan

3D5/
DES4 - 1
13:10

Invited Super Multi-View 3D Head-Up Display

Y. Takaki

Tokyo Univ. of A&T, Japan

3D5/
DES4 - 2
13:30

Low Crosstalk Glassless 3D HUD with Expanded Viewing Area in All Directions Using Novel Eye Tracking System

T. Matsumoto, K. Kusafuka, H. Nakamura^{}, G. Hamagishi^{*}, K. Yoshimoto^{*}, H. Takahashi^{*}*

Kyocera, Japan

^{}Osaka City Univ., Japan*

3D5/
DES4 - 3
13:50

10.4-in. Ultra-Slim a-Si TFT LCD with Tracking Gate Line in Pixel Technology for Automotive Display

C.-H. Kuan, J.-S. Liao, C.-Y. Du, C.-C. Chang, H.-H. Chen, H.-M. Su, W.-Z. Zeng

Chunghwa Picture Tubes, Taiwan

3D5/
DES4 - 4
14:10

An Automotive Grade Local Dimming Display System

W.-F. Chang, C.-L. Li, F.-H. Tsao, H.-H. Chen, H.-M. Su, W.-T. Tseng, S.-H. Yang, Y. Zhang

Chunghwa Picture Tubes, Taiwan

Friday, December 14

14:50 - 16:10

Room 222

3D6: Holography

Chair: J.-Y. Son, Konyang Univ., Korea
 Co-Chair: Y. Takaki, Tokyo Univ. of A&T, Japan

3D6 - 1 **Invited** **Creating Enriched Visual Experience with Holography**
14:50

M. Yamaguchi^{}, S. Igarashi^{*}, T. Nakamura^{*,**},
 K. Matsushima^{***}*

^{}Tokyo Tech, Japan*

*^{**}JST PRESTO, Japan*

*^{***}Kansai Univ., Japan*

3D6 - 2 **Improved the Image Quality of Computer-Generated Hologram in Holographic Waveguide System**
15:10

W.-K. Lin^{,**}, B.-S. Lin^{*}, W.-C. Su^{**}*

^{}Nat. Chiao Tung Univ., Taiwan*

*^{**}Nat. Changhua Univ. of Education, Taiwan*

3D6 - 3 **Special Purpose Computer for Holography on the Embedded System**
15:30

Y. Yamamoto, N. Masuda^{}, T. Nishitsuji^{**}, T. Kakue,
 T. Shimobaba, T. Ito*

Chiba Univ., Japan

^{}Tokyo Univ. of Sci., Japan*

*^{**}Tokyo Metropolitan Univ., Japan*

3D6 - 4 **Suppressing the Speckle Noise of Complex Modulation for Holographic Near-Eye Display**
15:50

Y. Pang, J. Xia, C. Chang^{}*

Southeast Univ., China

^{}Nanjing Normal Univ., China*

Author Interviews

16:20 – 16:50

Supporting Organizations:

International Conference on 3D Systems and Applications (3DSA)
 Ultra-Realistic Communications Forum (URCF)

Workshop on Applied Vision and Human Factors

Wednesday, December 12

13:20 - 13:25

Room 432

Opening

Opening Remarks

13:20

S. Uehara, AGC, Japan

13:25 - 14:30

Room 432

VHF1: High Dynamic Range

Chair: N. Hiruma, NHK-ES, Japan

Co-Chair: J. Bergquist, Consult., Japan

VHF1 - 1 **A Study on Prediction of the Maximum Luminance
13:25** **Value of SDR Images for HDR Displays by Using
CNN**

R. Kano, J. Inahara, M. Obermeier, K. Uruma, S. Hangai
Tokyo Univ. of Sci., Japan*

**Regensburg Tech. Univ. of Appl. Sci., Germany*

VHF1 - 2 **Picture-Level Control for Managing HDR Images and
13:45** **Power Consumption for Large OLED Displays**

T. Okada, T. Usui, Y. Fujisaki

NHK, Japan

VHF1 - 3 **Invited Advantage of 10,000 cd/m² with 8K Full-Spec
14:05** **HDR TV**

T. Ogura

Sony Visual Prods., Japan

----- Break -----

15:00 - 16:20

Room 432

VHF2: Color Quality

Chair: Y. Endo, AGC, Japan
 Co-Chair: N. Hiruma, NHK-ES, Japan

VHF2 - 1 **Advanced RGBW Algorithm for High Image Quality
 15:00** **with Low Power Consumption**

*X. Shi, J. Chen, L. Fang, L. Wu, B. Shen, J. Li
 Xiamen Tianma Microelect., China*

VHF2 - 2 **KANSEI Evaluation of Color Images in Different
 15:20** **Color Gamuts**

*Y. Inuzuka, S. Kageyama, T. Ishikawa, M. Ayama
 Utsunomiya Univ., Japan*

VHF2 - 3 **White Appearance of a Tablet Display under
 15:40** **Different Ambient Lighting Conditions and Its
 Impact on Visual Comfort**

H.-P. Huang^{,**}, M. Wei^{*}, L.-C. Ou^{**}
^{*}The Hong Kong Polytechnic Univ., Hong Kong
^{**}Nat. Taiwan Univ. of S&T, Taiwan*

VHF2 - 4 **KANSEI Evaluation of Skin Color of Young Japanese
 16:00** **Women on a Display and the Relation to
 Colorimetric Values of Whole Face**

S. Shiromizu, K. Kawame, K. Arimoto^{}, M. Kimura^{*},
 H. Hata^{*}, M. Koshino^{*}, T. Ishikawa, A. Miyoshi
 Utsunomiya Univ., Japan
^{*}Shiseido Global Innovation Ctr., Japan*

----- Break -----

16:40 - 18:10

Room 432

VHF3: Physiological and Psychophysical Factors

Chair: H. Ujike, AIST, Japan
 Co-Chair: T. Shibata, Tokyo Univ. of Social Welfare, Japan

VHF3 - 1 ***Invited* Multimodal Neuroimaging to Visualize Brain
 16:40** **Networks for 3-D Object Perception**

S. Iwaki, J. W. Belliveau^{}
 AIST, Japan
^{*}Massachusetts General Hospital, USA*

- VHF3 - 2** *Invited* **Remote and Non-Contact Extraction Techniques of Autonomic Nervous System Indices and Blood Pressure Variabilities from Video Images**
 17:05
M. Yoshizawa, N. Sugita, A. Tanaka^{}, N. Homma, T. Yambe*
Tohoku Univ., Japan
^{*}*Fukushima Univ., Japan*
- VHF3 - 3** **Physiological Effects of Oscillating Blue Light**
 17:30
E. Yuda, K. Yamamoto, Y. Yosida, J. Hayano
Nagoya City Univ., Japan
- VHF3 - 4** **Visual Resolution Measurement of Display Using the Modified Landolt C**
 17:50
Y. S. Baek, Y. Kwak, S. Park^{}*
Ulsan Nat. Inst. of S&T, Korea
^{*}*Samsung Elect., Korea*

Author Interviews

18:10 – 18:40

Thursday, December 13

9:00 - 10:25	Room 432
VHF4: Ergonomics for Automotive Applications <i>Special Topics of Interest on Automotive Displays</i>	

Chair: Y. Imai, Mitsubishi Elec., Japan
 Co-Chair: Y. Endo, AGC, Japan

- VHF4 - 1** *Invited* **Visual Cues with HUD: Driving Behavior Analysis of Elderly and Experienced Drivers in Hazard Anticipation Scenes**
 9:00
Y. Saito^{}, A. Yamasaki^{*}, S. Inoue^{**}, T. Ito^{***}, H. Inoue^{****}, P. Raksincharoensak^{*}*
^{*}*Tokyo Univ. of A&T, Japan*
^{**}*Toyota Motor, Japan*
^{***}*Univ. of Tokyo, Japan,*
^{****}*Kanagawa Inst. of Tech., Japan*
- VHF4 - 2** **Advanced Optical Characterization Techniques and Simulation of Anti-Glare Cover Glass**
 9:25
T. Saitoh, T. Kanai
Nippon Elec. Glass, Japan
- VHF4 - 3** **Sparkle Measurement of Anti-Glare Displays with Simulating Human-Eye Perception**
 9:45
M. Kurashige, G. Furui, K. Ishida, H. Suzuki, M. Tsunekawa, Y. Iwata, N. Nakamura
Dai Nippon Printing, Japan

VHF4 - 4 **Automotive Displays and HMI: Past, Present and Future**
10:05

P. M. Knoll

Karlsruhe Inst. of Tech., Germany

----- Break -----

Author Interviews

10:40 – 11:10

----- Lunch -----

14:20 - 16:50

Event Hall

**Poster VHFp1: Applied Vision and Human Factors
 - Image Quality**

VHFp1 - 1 **Reproduction of Perceptual Reality in Standard-Dynamic-Range (SDR) Environments Using High-Dynamic-Range (HDR) Images Compressed by Global Tone Mapping: Further Analysis and Subjective Evaluation of Reproduced Images**

Y. Fukaya, S. Iwaida, S. Hira, S. Ohtsuka

Kagoshima Univ., Japan

VHFp1 - 2 **The Number of the Super Gradation Reconstruction Method of the Gray Image Based on the Interpolation Function**

M. Mizuno, F. Saitoh

Gifu Univ., Japan

VHFp1 - 3 **Image Contrast Improvement Based on Distribution of Global Differential Gray-Levels Using Stochastic-Relaxation-Method**

N. Matsushita, F. Saitoh

Gifu Univ., Japan

VHFp1 - 4 **Optical Compensation of Arc Angle Design Research**

Y. H. Lo, W. C. Yang, H. C. Huang, W. R. Guo, W. M. Huang

AU Optronics, Taiwan

VHFp1 - 5 **A Method for Evaluating the Effect of Visible Low-Frequency Fringe on Image Quality**

L. Xu, Y. Ma, P. Dang, Z. Duan

Visionox Tech., China

14:20 - 16:50

Event Hall

**Poster VHFp2: Applied Vision and Human Factors
- Color Gamut Metrology
Special Topics of Interest on Wide Color Gamut and
Color Reproduction**

**VHFp2 - 1 Analysis of Color Gamuts and Tone Characteristics
of Tablet Display Under Different Ambient Light
Levels**

T.-Y. Chiang, H.-S. Chen

Nat. Taiwan Univ. of S&T, Taiwan

14:20 - 16:50

Event Hall

**Poster VHFp3: Applied Vision and Human Factors
- Automotive Applications
Special Topics of Interest on Automotive Displays**

VHFp3 - 1 Layer-Wise Analysis of TFT-LCD Reflectivity

L. Xulin, Y. Chunqiu, L. Chen

Shenzhen China Star Optoelect. Tech., China

**VHFp3 - 2 An Automotive Display with Multi Domains and
Changing Viewing Angle Functions**

Y. W. Chang, Y. E. Wu

AU Optronics, Taiwan

14:20 - 16:50

Event Hall

**Poster VHFp4: Applied Vision and Human Factors
- Image Processing**

**VHFp4 - 1 Extraction of Character String Region from Sign in
Scene Image by Labeling Process and Edge
Information**

M. Noda, F. Saitoh

Gifu Univ., Japan

**VHFp4 - 2 Detection of Plural Image Areas on Genetic
Algorithm with Immune System Added Attenuation
Processing**

M. Ito, F. Saitoh

Gifu Univ., Japan

VHFp4 - 3 High-Speed Image Matching Using Characteristic Pixels Based on Density Histogram

K. Sakai, F. Saitoh
Gifu Univ., Japan

VHFp4 - 4 Image Template Matching Based Incremental Sign of Neighboring Eight Direction

H. Imaeda, F. Saitoh
Gifu Univ., Japan

14:20 - 16:50

Event Hall

**Poster VHFp5: Applied Vision and Human Factors
- Biometrics****VHFp5 - 1 The Personal Authentication by Wrist Image Using Selected Block Matching**

T. Yasukawa, F. Saitoh
Gifu Univ., Japan

VHFp5 - 2 Proposal and Application of Evaluation Method in Health Condition Evaluation System by Eye Movement and Lips Movement

Y. Kurosawa, T. Miyamoto, Y. Uehara, S. Mochiduki,
Y. Hoshino, M. Yamada
Tokai Univ., Japan

VHFp5 - 3 A New Gaze Analysis Method During Playing Sport Using the High Definition of the 4K Picture

T. Sarugaku, R. Koyama, Y. Kobayashi, S. Mochiduki,
M. Yamada
Tokai Univ., Japan

IDW '19

The 26th International Display Workshops

Nov. 27 - 29, 2019

Sapporo Convention Center
Sapporo, Japan<http://www.idw.or.jp/>

14:20 - 16:50

Event Hall

**Poster VHFp6/3Dp3: Applied Vision and Human Factors
- Human Factors of AR/VR
Special Topics of Interest on AR/VR and Hyper Reality**

VHFp6/
3Dp3 - 1

**Study on Subjective Depth Evaluation for
Holographic Head-Mounted Display**

*H. Kubo, Y. Oguro, Y. Sakamoto
Hokkaido Univ., Japan*

VHFp6/
3Dp3 - 2

**Study on Correction of Field Curvature in Head-
Mounted Display Using Electro-Holography**

*Y. Oguro, H. Kubo, Y. Sakamoto
Hokkaido Univ., Japan*

14:20 - 16:50

Event Hall

Poster DESp3/VHFp7: Backlight Technology

DESp3/
VHFp7 - 1

**Waving-Hand Steganography Embedded in a
Backlight of an LCD**

S. Morita, A. Tsuji, H. Yamamoto
Utsunomiya Univ., Japan
Tokushima Univ., Japan

DESp3/
VHFp7 - 2

**Convolutional Neural Network Driven Localized
Backlight Dimming Strategy for Liquid Crystal
Displays**

J. Jo, J. S. Park, J. W. Soh, N. I. Cho
Seoul Nat. Univ., Korea
Samsung Elect., Korea

IDW Best Paper Award

IDW Outstanding Poster Paper Award

These awards will go to the most outstanding papers selected from those presented at IDW '18.

The 2018 award winners will be announced on the IDW website: <http://www.idw.or.jp/award.html>

Friday, December 14

9:00 - 10:05

Room 222

VHF5/3D4: Human Factors and Image Quality

Chair: S. Uehara, AGC, Japan
 Co-Chair: H. Mizushima, Tokushima Univ., Japan

VHF5/3D4 - 1 **Invited Simulation of Slanted Color Moirés in IP-Type 3-D Displays**

9:00

H. Lee^{,**}, J. Kim^{**}, S. Yano^{*}, J.-Y. Son^{**}*

^{}Shimane Univ., Japan*

*^{**}Konyang Univ., Korea*

VHF5/3D4 - 2 **Depth of Field Widening with Increasing Number of Image Projected to Viewers' Eyes**

9:25

J.-Y. Son^{}, H. Lee^{*,**}, B.-R. Lee^{***}, W. Son^{***}, S. Yano^{**}*

^{}Konyang Univ., Korea*

*^{**}Shimane Univ., Japan*

*^{***}ETRI, Korea*

VHF5/3D4 - 3 **Color Breakup Visibility Thresholds for Field Sequential Color Displays**

9:45

P. Wang, Y. Zhang, J. Wang

Southeast Univ., China

----- Break -----

Author Interviews

12:00 – 12:30

10:40 - 12:05

Room 222

VHF6: Virtual Reality
Special Topics of Interest on AR/VR and Hyper Reality

Chair: T. Shibata, Tokyo Univ. of Social Welfare, Japan
 Co-Chair: S. Uehara, AGC, Japan

VHF6 - 1 **Invited Ergonomic Evaluations of Virtual Reality System and Content**

10:40

T. Kawai

Waseda Univ., Japan

VHF6 - 2 **Comparison of Color Perception Between Head-Mounted Display and Ordinary Display**

11:05

T. Nishimura, S. Dozaki, K. Hirai, T. Horiuchi

Chiba Univ., Japan

VHF6 - 3 **2.02-in. Mini-LEDs Wide Color Gamut Solution for Virtual Reality Display**
11:25

H.-H. Wu, S. C. Kuo, I.-H. Hsieh, A. Chen
AU Optronics, Taiwan

VHF6 - 4 **Design of Machine Vision Aided Measurement System for Near-Eye Display Devices**
11:45

S. Hu, Q. Zhu, Y. Cao, Y. Tang, Y. Zheng
Southeast Univ., China

Author Interviews

12:05 – 12:30

----- Lunch -----

13:10 - 14:40

Room 432

VHF7: Color Gamut Metrology
Special Topics of Interest on Wide Color Gamut and Color Reproduction

Chair: K. Masaoka, NHK, Japan

Co-Chair: K. Hirai, Chiba Univ., Japan

VHF7 - 1 ***Invited* Visual Evaluation of Display Color Gamut**
13:10

Y. Kwak, Y. S. Baek
Ulsan Nat. Inst. of S&T, Korea

VHF7 - 2 ***Invited* Simulation and Verification for Color Volume of HDR WCG Display**
13:35

F. Jiang, K. Masaoka^{}, M. Fairchild*
Rochester Inst. of Tech., USA
^{*}*NHK, Japan*

VHF7 - 3 **Fast and Accurate Colour Gamut Volume Measurements of RGB Displays with Degenerate Colours**
14:00

J. Bergquist
Consult., Japan

VHF7 - 4 **A Color Quality Volume Metric for HDR Displays**
14:20

W. Lv, H. Xu, Z. Ye, J. Qiu
Zhejiang Univ., China

----- Break -----

14:50 - 15:55

Room 432

VHF8: Color Vision
Special Topics of Interest on Wide Color Gamut and
Color Reproduction

Chair: K. Masaoka, NHK, Japan

Co-Chair: Y. Kwak, Ulsan Nat. Inst. of S&T, Korea

VHF8 - 1 *Invited* Applicability of CIELAB Volume Metric to the
14:50 Latest Electronic Display

H. Yoshida, K. Hirai , Y. Mizokami**

Sharp, Japan

**Chiba Univ., Japan*

VHF8 - 2 Helmholtz-Kohlrausch Effect Estimation
15:15 Considering Lightness

Y. Hayami, D. Takasu, H. Aoyanagi , H. Takamatsu* ,*

Y. Shimodaira, G. Ohashi

Shizuoka Univ., Japan

**NEC Display Solutions, Japan*

VHF8 - 3 Observer Metamerism for Anomalous Trichromats
15:35 and the Elderly in a Wide Color Gamut Display

*S. Sunaga, R. Suto, S. Katsura, H. Yaguchi**

Kyushu Univ., Japan

**Chiba Univ., Japan*

Author Interviews

16:20 – 16:50

Supporting Organizations:

Technical Group on Information Display, ITE

Technical Committee on Electronic Information Displays, Electronics Society, IEICE

EXHIBITION

12:00 – 18:00 Wednesday, Dec. 12

10:00 – 18:00 Thursday, Dec. 13

10:00 – 14:00 Friday, Dec. 14

Event Hall (1F, Building 1)

Nagoya Congress Center

Free admission with your registration name tag

Workshop on Projection and Large-Area Displays and Their Components

Wednesday, December 12

15:00 - 15:05

Room 131

Opening

Opening Remarks

15:00

S. Ouchi, Hitachi, Japan

15:05 - 16:25

Room 131

PRJ1/FMC2: Waveguide for AR-Near Eye Display *Special Topics of Interest on AR/VR and Hyper Reality*

Chair: D. Cuypers, CMST, Belgium

Co-Chair: K. Kälantär, Global Optical Solutions, Japan

**PRJ1/
FMC2 - 1
15:05** ***Invited* A Plastic Holographic Waveguide Combiner
for Light-Weight and Highly-Transparent Augmented
Reality Glasses**

*T. Yoshida, K. Tokuyama, Y. Takai, D. Tsukuda, T. Kaneko,
N. Suzuki, T. Anzai*, A. Yoshikaie, K. Akutsu, A. Machida*

Sony, Japan

**Sony Global Manufacturing & Operations, Japan*

**PRJ1/
FMC2 - 2
15:25** **Waveguide-HOE-Based Camera That Captures a
Frontal Image for Flat-Panel Display**

H. Konno, S. Igarashi*, T. Nakamura*, **, M. Yamaguchi**

**Tokyo Tech, Japan*

***JST PRESTO, Japan*

**PRJ1/
FMC2 - 3
15:45** **Novel Holographic Waveguide Display with Kepler
Telescope Configuration**

Z. Shen, Y. Zhang, A. Liu, Y. Weng, X. Zhu, X. Li

Southeast Univ., China

**PRJ1/
FMC2 - 4
16:05** **Light Efficiency Modeling for a Holographic
Waveguide Display**

X. Zhu, Y. Zhang, Z. Shen, A. Liu, Y. Weng

Southeast Univ., China

----- Break -----

16:40 - 18:00

Reception Hall 2

PRJ2/LCT3: LC-Based Eye Devices

Chair: O. Akimoto, Sony Semiconductor Solutions, Japan
 Co-Chair: T. Ishinabe, Tohoku Univ., Japan

PRJ2/ LCT3 - 1 *Invited* **Liquid Crystal Lenses for Augmented Reality**

16:40

*Y.-H. Lin, Y.-J. Wang**Nat. Chiao Tung Univ., Taiwan***PRJ2/ LCT3 - 2** **Design of Liquid Crystal Based Switchable Contact Lenses**

17:00

D. Cuypers^{,**}, R. Verplancke^{*,**}, H. D. Smet^{*,**}***imec, Belgium****Ghent Univ., Belgium***PRJ2/ LCT3 - 3** **Liquid Crystal Displays Compatible with Contact Lenses for Vision Correction Applications**

17:20

A. V. Quintero, P. Pérez-Merino^{}, R. Verplancke, J. Vanfleteren, H. D. Smet**Ghent Univ., Belgium**^{*}Fundación Jiménez Díaz, Spain***PRJ2/ LCT3 - 4** **Applications of Liquid Crystal Lens with Focal Length Variable from Negative to Positive Values**

17:40

*J. J. Gao, J. L. Yeh, J. W. Pan, S. C. Jeng**Nat. Chiao Tung Univ., Taiwan***Author Interviews**

18:10 – 18:40

Thursday, December 13

9:00 - 10:00

Room 222

PRJ3: Light Source

Chair: H. Hatanaka, Ushio, Japan
 Co-Chair: M. Kuramoto, Stanley Elec., Japan

PRJ3 - 1 *Invited* **Effect of Angular Profile and Wavelength on Speckle Reduction in Laser Projection System**

9:00

*H. Yamada, K. Moriyasu, H. Sato, H. Hatanaka**Ushio, Japan***PRJ3 - 2** **An RGB Laser Measuring Instrument for Raster-Scanning Laser Projectors**

9:20

*K. Hieda, T. Maruyama, F. Narusawa**HIOKI E.E., Japan*

PRJ3 - 3 Phosphor-in-Glass (PiG) Films for High-Power and High-Luminance Laser Lighting and Display
9:40

*P. Zheng, S. Li, R.-J. Xie
Xiamen Univ., China*

10:00 - 10:24

Room 222

Short Presentation : Projection Technologies

All authors of poster papers for the PRJp1 session will give 3-minute oral presentations with no discussion time.

Author Interviews

10:40 – 11:10

----- Lunch -----

14:20 - 16:50

Event Hall

Poster PRJp1: Projection Technologies

PRJp1 - 1 Speckle Reduction Device Using Two-Axis Resonant Microstage

Y. Fujimura, T. Tsukamoto^{}, S. Tanaka^{*}
Ricoh Ind. Solutions, Japan
^{*}Tohoku Univ., Japan*

PRJp1 - 2 The Optical Radiation Safety Analysis for Ultra-Short Throw Laser Projection Display

*F. Wang, X. Li, C. Jin
Southeast Univ., China*

PRJp1 - 3 Optical Design of a Waveguide Display System with Large Field of View and Efficiency Calculation Model

*X. Zhu, Y. Zhang, Y. Weng, A. Liu, Z. Shen
Southeast Univ., China*

PRJp1 - 4 Flexible FOV and Shadow Removal in Mobile Projection System Using Multiple Pan Projectors

*T. Sato, D. Iwai, K. Sato
Osaka Univ., Japan*

PRJp1 - 5 Projection Method for Flat Surface Object to Spherical or Cylindrical Surface

*S. Tominaga, K. Kawai, H. Yamamoto
Utsunomiya Univ., Japan*

PRJp1 - 6 Dual Micro-Display Illuminators for Photochemical Fabrications

C.-J. Ou, C.-Q. Chiu, Y.-H. Chiu, J.-F. Lin
Hsiuping Univ. of S&T, Taiwan

PRJp1 - 7 Contrast Ratio, MTF and Virtual Images for Environmental Science

C.-J. Ou, M.-Y. Huang, S.-R. Yang, M.-J. Liu, Y.-R. Chen
Hsiuping Univ. of S&T, Taiwan

PRJp1 - 8 Analytical Form of Light Source Apodization Distribution Through Display Element

C.-J. Ou, S.-R. Yang, P.-X. Huang, C.-F. Chang
Hsiuping Univ. of S&T, Taiwan

Friday, December 14

9:00 - 10:20

Room 224

PRJ4: Wearable
Special Topics of Interest on AR/VR and Hyper Reality

Chair: S. Ouchi, Hitachi, Japan
 Co-Chair: T. Suzuki, JVC Kenwood, Japan

PRJ4 - 1 Can We Overcome the Challenges on the Path to Consumer Adoption of AR Headsets?

9:00

Z. Bouhamri, E. Virey, P. Mukish
Yole Développement, France

PRJ4 - 2 Invited Wide-Range Dimming Device on a Plastic Substrate for Augmented Reality Glasses

9:20

T. Kono, A. Machida, K. Kadono, Y. Ishii, H. Takanashi,
A. Nishiike, H. Suzuki, Y. Nakagawa*, K. Ando*,*
D. Kasahara, A. Takeda*, K. Nomoto*

Sony, Japan
 **Sony Global Manufacturing & Operations, Japan*

PRJ4 - 3 Fiber Scanning Technology for Projection Unit

9:40

S. Onoe, T. Matsuda, T. Nakamura, Y. Seo, S. Ouchi
Hitachi, Japan

PRJ4 - 4 Full-Color Waveguide-Coupling Near-Eye Displays Using Chromatic Polarization Volume Gratings

10:00

Y. Weng, J. Cui, X. Li, Y. Zhang
Southeast Univ., China

----- Break -----

10:40 - 11:40

Room 224

PRJ5: Automotive Displays and Sensors
Special Topics of Interest on Automotive Displays

Chair: K. Ohara, Marubun, Japan
 Co-Chair: M. Kuwata, Mitsubishi Elec., Japan

PRJ5 - 1 *Invited* Use of Aerial Agent for Smart Cockpit

10:40

M. Morita, H. Yamamoto^{}, K. Yoshihara, N. Nara*
Clarion, Japan
^{*}*Utsunomiya Univ., Japan*

PRJ5 - 2 Improving Image Quality of Lensless Light-Field Imaging Using Pattern Projection Technique

11:00

Y. Nakamura, K. Yamaguchi, K. Tajima, T. Shimano
Hitachi, Japan

PRJ5 - 3 Optimization of Vertical View Human Skeleton Recognition from Range Images

11:20

A. Watanabe, T. Kamimura
Hitachi, Japan

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:10

Room 224

PRJ6: Projection Applications

Chair: S. Shikama, Setsunan Univ., Japan
 Co-Chair: M. Kurashige, Dai Nippon Printing, Japan

PRJ6 - 1 *Invited* How Can We Standardize Smart Projection Displays with Sensors?

13:10

J. Kinoshita
Osaka Univ., Japan

PRJ6 - 2 Pixel-Level Visible Light Communication Projector with Interactive Update of Images and Data

13:30

T. Hiraki, S. Fukushima, H. Watase^{}, T. Naemura*
Univ. of Tokyo, Japan
^{*}*Tokyo Electron Device, Japan*

PRJ6 - 3 An Ultrashort Throw Ratio Projection Lens Design Based on a Catadioptric Structure

13:50

Y. J. Chen, H. C. Wang, J. W. Pan
Nat. Chiao Tung Univ., Taiwan

----- Break -----

14:50 - 16:30

Room 224

PRJ7: Projection Mapping

Chair: H. Yamamoto, Utsunomiya Univ., Japan
 Co-Chair: Y. Asakura, Nittoh, Japan

PRJ7 - 1 Invited Dynamic Projection Mapping Toward Post Reality

14:50

Y. Watanabe
Tokyo Tech, Japan

PRJ7 - 2 Invited Protection Method from Secret Photography

15:10

I. Suzuki^{,**}, S. Ando^{*,**}, Y. Ochiai^{*,**}*
**Univ. of Tsukuba, Japan*
***Pixie Dust Techs., Japan*

PRJ7 - 3 Invited Appearance Manipulation Using Light-Field Projection

15:30

T. Amano
Wakayama Univ., Japan

PRJ7 - 4 Invited Latest Research Trends on Computational Projection Mapping

15:50

D. Iwai
Osaka Univ., Japan

PRJ7 - 5 Invited Projection Explores a New Field of Spatial Art

16:10

J. Sugimori
J. F. Oberlin Univ., Japan

Author Interviews

16:30 – 16:50

Supporting Organizations:

Technical Group on Information Display, ITE
 Laser Display Technology Research Group, Optical Society of Japan
 Laser Display and Lighting Conference
 Consortium of Visible Laser Diode Applications
 The Laser Society of Japan

Workshop on Electronic Paper

Wednesday, December 12

15:00 - 15:05

Room 133

Opening

Opening Remarks

15:00

K. Hashimoto, E-ink Japan, Japan

15:05 - 16:20

Room 133

EP1: Expansion of Electrophoretic Displays

Chair: G. Zhou, South China Normal Univ., China

Co-Chair: M. Wang, Amazon Lab126, USA

EP1 - 1 ***Invited* Technologies Development of EPD for Future Electronic Paper Applications**

15:05

Y.-S. Chang

E Ink, Taiwan

EP1 - 2 ***Invited* Active Matrix Backplane Technologies for Flexible Electrophoretic e-Papers**

15:30

B.-R. P. Yang, X. Wang, D. Hu*, Y. Lin*, X. Zeng*, Y. Chen**

Sun Yat-Sen Univ., China

**Guangzhou OED Techs., China*

EP1 - 3 ***Invited* Prototyping of e-Tile**

15:55

*M. Omodani, Y. Adachi, H. Shibata**

Tokai Univ., Japan

**Fuji Xerox, Japan*

----- Break -----

16:40 - 17:55

Room 133

EP2: Emerging e-Paper Technologies

Chair: A. Suzuki, Chiba Univ., Japan
 Co-Chair: N.-S. Roh, Samsung Elect., Korea

**EP2 - 1
16:40 Invited ePaper 2.0 (Full Color + Video) Enable by Retro-reflective eTIR Technology**

*R. J. Fleming, S. Peruvemba, B. Sadlik, B. Holman
 CLEARink Displays, USA*

**EP2 - 2
17:05 Invited Full Color Video on E-Paper: It's Reality Now**

A. Henzen^{, **, ***}, G. Zhou^{*, **, ***}*

**South China Normal Univ., China*

***GR8 Optoelect., Hong Kong*

****Shenzhen Guohua Optoelect. Tech., China*

**EP2 - 3
17:30 Invited Advances in Cholesteric Based eWriter Technologies and Applications**

*A. Khan
 Kent Displays, USA*

Author Interviews

18:10 – 18:40

Thursday, December 13

9:00 - 10:00

Room 133

EP3: Advance of Electrochromic Displays

Chair: N. Kobayashi, Chiba Univ., Japan
 Co-Chair: Y. Hotta, Ricoh, Japan

**EP3 - 1
9:00 Design and Fabrication of Thermally Stable Electrochromic Device**

*S. Mondal, M. Higuchi
 NIMS, Japan*

**EP3 - 2
9:20 Improved Memory Function in Ag Deposition-Based Electrochromic Device Utilizing Prussian Blue on Counter Electrode**

*S. Kimura, K. Nakamura, N. Kobayashi
 Chiba Univ., Japan*

**EP3 - 3
9:40 Effect of Size and Shape of Deposited Silver Nanoparticles on Coloration Properties of Silver Deposition-Based Multicolor Electrochromic Device**

*T. Sugita, K. Nakamura, N. Kobayashi
 Chiba Univ., Japan*

10:00 - 10:03

Room 133

Short Presentation: Electronic Paper

All authors of poster papers for the EPp1 session will give 3-minute oral presentations with no discussion time.

----- Break -----

Author Interviews

10:40 – 11:10

14:20 - 16:50

Event Hall

Poster EPp1: Electronic Paper

EPp1 - 1 Effect of Electrical Double Layer Capacitance on Coloration Performance in Multicolor ECD with Hybrid Capacitor Configuration

Z. Liang, K. Nakamura, N. Kobayashi

Chiba Univ., Japan

17:10 - 18:35

Room 133

EP4/UXC3: Approaches to Ideal Replacement of Paper Media

Chair: M. Omodani, Tokai Univ., Japan

Co-Chair: J. Kobayashi, Dai Nippon Printing, Japan

**EP4/
UXC3 - 1 *Invited* Diffusion of e-Book in Japan from the View Point of Consumer Activities**

17:10

M. Ueda

Kyoto Sangyo Univ., Japan

**EP4/
UXC3 - 2 Evaluation of Ease of Handling for a Digital Paper Device**

17:35

*H. Shibata, M. Omodani**

Fuji Xerox, Japan

**Tokai Univ., Japan*

**EP4/
UXC3 - 3 Comparative Analysis of Reading Experience in Paper Book, e-Reader, and Flexible e-Reader Based on Kano Model**

17:55

E. Amasawa, T. Ihara, K. Hanaki

Univ. of Tokyo, Japan

**EP4/
UXC3 - 4
18:15**

Smart Devices Enabled by e-Paper Displays and IoT

*K. Blankenbach, D. Bogner, A. Marsal, K. Schuhmacher,
P. Duchemin*, B. Rist***

Pforzheim Univ., Germany

**MSC Techs., Germany*

***August Faller, Germany*

Author Interviews

18:40 – 19:10

Friday, December 14

14:50 - 15:55

Room 131

EP5: Various Challenges for e-Paper

Chair: M. Higuchi, NIMS, Japan

Co-Chair: Y. Toko, Stanley Elec., Japan

**EP5 - 1
14:50**

***Invited* Electrochromic Lens for Transparence
Eyewear with High Response Speed**

*F. Kaneko, Y. Matsuoka, Y. Takahashi, M. Shinoda,
S. Yamamoto, H. Takahashi, T. Yashiro*

Ricoh, Japan

**EP5 - 2
15:15**

**A Transparent/Reflective Display Using by
Electrochromic**

T.-H. Wang, C.-C. Liao, J.-T. Lian

Chunghwa Picture Tubes, Taiwan

**EP5 - 3
15:35**

**Development of a Video-Available Paper-Like Display
Based on Polarizer-Free Liquid Crystal Technology**

C.-C. Liao, **, C.-C. Chiou*, J.-T. Lian**

**Chunghwa Picture Tubes, Taiwan*

***Nat. Tsing Hua Univ., Taiwan*

Author Interviews

16:20 – 16:50

Workshop on MEMS and Emerging Technologies for Future Displays and Devices

Thursday, December 13

10:40 - 13:10

Event Hall

**Poster MEETp1: Quantum Dots and Nanotechnologies
Special Topics of Interest on Quantum Dot Technologies**

MEETp1 - 1 Enhancement of Optical Emission from Quantum Dots by Photonic Crystal Cavities Fabricated on SOI Substrates

*T. Matsutomi, T. Hayashi, K. Tanaka, K. Yasui
Nagaoka Univ. of Tech., Japan*

MEETp1 - 2 High Efficiency Green Cd-Free Quantum Dot Light-Emitting Diodes with Cross-Linked Hole Transport Layer

*K. J. Eun, M. N. Naik, C. Y. Lee, J. H. Kwon
Kyung Hee Univ., Korea*

10:40 - 13:10

Event Hall

Poster MEETp2: Novel Components and Process Technologies

MEETp2 - 1 Calibrating CdS Based Sensors for Visual and Display Interactive Control under Natural Light Environment

*C.-J. Ou, F.-R. Lin, Y.-R. Chen, K.-Y. Chen
Hsiuping Univ. of S&T, Taiwan*

MEETp2 - 2 Analytical Solution of Natural Frequency for Optimized Grating Light Valve

*C.-J. Ou, J.-F. Lin, S.-R. Yang, Z.-W. Wang
Hsiuping Univ. of S&T, Taiwan*

17:10 - 17:15

International Conference Room
Opening

Opening Remarks

17:10

M. Nakamoto, Shizuoka Univ., Japan

17:15 - 18:55

International Conference Room
**MEET1: Novel Materials, Fundamental Components and
Process Technologies**

Chair: J. Jang, Kyung Hee Univ., Korea

Co-Chair: A. Dussaigne, CEA-LETI, France

MEET1 - 1 *Invited* **Underpinning the United Kingdoms' "Zero Plastic Waste Policy"; the Use of Phosphors in Labelling and Tagging as Aids to Plastics Packaging Recycling Using Intelligent Separation Technologies**

17:15

*J. Silver, G. R. Fern, P. G. Harris, P. Marsh, K. Tarverdi
Brunel Univ. London, UK*

MEET1 - 2 *Invited* **Gaussian Density of State in Organic Thin Film Transistor Model**

17:35

Y. Bonnassieux, Y. Lee, S. Jung, G. Horowitz
Ecole Polytechnique, France
Pohang Univ. of S&T, Korea

MEET1 - 3 *Invited* **Cathodoluminescence from Undoped BaAl₂O₄ in a Transmission Electron Microscope**

17:55

*G. R. Fern, D. D. Engelsen, F. Yang, T. G. Ireland, J. Silver
Brunel Univ. London, UK*

MEET1 - 4 *Invited* **Flat Panel Deep Ultraviolet(UV) Light Sources with Carbon Nanotube Cold Cathode**

18:15

*K. C. Park, S. T. Yoo
Kyung Hee Univ., Korea*

MEET1 - 5 *Invited* **Laser Diode with New Polymer Using Extrusion Technology for Acceleration of Plant Growth in Polytunnels**

18:35

*K. Tarverdi, G. R. Fern, T. G. Ireland, J. Silver, P. Marsh,
Q. Qi
Brunel Univ. London, UK*

Author Interviews

18:55 – 19:10

Friday, December 14

9:00 - 10:20	International Conference Room
MEET2: Micro/NanoDisplays and Nanotechnology Application (1)	

Chair: P. Kathirgamanathan, Brunel Univ. London, UK
 Co-Chair: K. C. Park, Kyung Hee Univ., Korea

MEET2 - 1 Invited Full InGaN Based LED: Towards a Native Full-color Micro-Display Solution

9:00

A. Dussaigne
CEA-LETI, France

MEET2 - 2 Invited Design, Fabrication, Transfer Bonding and Active Matrix Driving of GaN-Based Micro-LEDs Displays

9:20

Z. Liu, K. Zhang**, C. Qiu*, K. M. Lau*, H. S. Kwok**, X. Sun**
**Southern Univ. of S&T, China*
***Hong Kong Univ. of S&T, Hong Kong*

MEET2 - 3 Invited Mass Production of Holographic Transparent Components for Wearable Applications

9:40

J. M. Russo, F. Dimov, R. Nesbitt, S. Coe-Sullivan
Luminit, USA

MEET2 - 4 Invited Manufacturing Solutions for Micro-LED Displays

10:00

A. Paranjpe
Veeco Instrs., USA

----- Break -----

10:40 - 12:00	International Conference Room
MEET3: Micro/NanoDisplays and Nanotechnology Application (2)	

Chair: S. Coe-Sullivan, Luminit, USA
 Co-Chair: Y. Bonnassieux, Ecole Polytechnique, France

MEET3 - 1 Invited Future Microdisplays Through Integration of Micro-LEDs

10:40

I. Kymissis
Columbia Univ., USA

MEET3 - 2 Invited MicroLED Driving the Third Wave of Technology Revolution of Information Display

11:00

Q. F. Yan
Fuzhou Univ., China

MEET3 - 3 Invited Key Material and Production Equipment Requirements to Realize High-Yield MicroLED Mass-Production

11:20

*F. J. Henley**QMAT, USA*

MEET3 - 4 Process Optimization for TFT Integrated MEMS Shutter Display

11:40

*S. A. A. Nusayer, P. Schalberger, H. Baur, C. Jurgschat, N. Fruehauf**Univ. of Stuttgart, Germany*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

International Conference Room

MEET4: EL Quantum Dots Technologies

Special Topics of Interest on Quantum Dot Technologies

Chair: *F. Yan, Fuzhou Univ., China*Co-Chair: *Z. Liu, Southern Univ. of S&T, China*

MEET4 - 1 Invited Solution Processed Charge Generation Junctions for Highly Efficient Quantum-Dot Light Emitting Diodes

13:10

*J. Jang, H.-M. Kim, J. Kim**Kyung Hee Univ., Korea*

MEET4 - 2 Invited Efficient Inverted Quantum Dot Light-Emitting Diodes Fabricated by Inkjet Printing Technique

13:30

*C. Lee**Seoul Nat. Univ., Korea*

MEET4 - 3 Invited The Color Revolution: Towards Ultra-Wide Color Gamut

13:50

*X. W. Sun**Southern Univ. of S&T, China*

MEET4 - 4 Invited Highly Saturated Color Quantum-Dot LEDs

14:10

*P. Kathirgamanathan**Brunel Univ. London, UK*

----- Break -----

14:50 - 15:50

International Conference Room

MEET5: Emerging Quantum Dots and Nanotechnologies
Special Topics of Interest on Quantum Dot Technologies

Chair: I. Kymissis , Columbia Univ., USA

Co-Chair: X. W. Sun, Southern Univ. of S&T, China

MEET5 - 1 *Invited* Cadmium-Free Quantum Dot Inkjet Inks for Color Conversion Devices

14:50

E. Lee, R. Tangirala, C. Hotz, H. Kim, T. Miki, E. Otsuki*, S. Yoshihara*, T. Kizaki*, A. Ishizuka*, I. Kiyoto**

Nanosys, USA

**DIC, Japan*

MEET5 - 2 *Invited* Tailoring Quantum Dot Structure for Enhanced Device Lifetime of Quantum-Dot Light-Emitting Diodes (QLEDs)

15:10

Y. Yang, W. Cao, C. Xiang, L. Wu, L. Qian, X. Yan

TCL Corporate Res., China

MEET5 - 3 *Invited* Synthesis and Optical Properties of Colloidal InN Quantum Dots

15:30

J. Nagakubo, M. Hirakawa, T. Nishihashi, H. Murakami

ULVAC, Japan

Author Interviews

16:20 – 16:50

I-DEMO
(Innovative Demonstration Session)

Live demonstrations
of emerging information display technologies
by oral and poster presenters

Thursday, Dec. 13, 2018

10:40 – 16:50

Event Hall (1F, Building 1)
Nagoya Congress Center

Workshop on Display Electronic Systems

Wednesday, December 12

16:40 - 18:00

Room 222

3D2/DES1: Novel Display Systems

Special Topics of Interest on AR/VR and Hyper Reality

Chair: C.-Y. Chen, Nat. Taiwan Univ. of S&T, Taiwan

Co-Chair: Y. Oyamada, Tottori Univ., Japan

**3D2/
DES1 - 1
16:40** ***Invited* Hidden Stereo: Synthesizing Ghost-Free Stereoscopic Images for Viewers without 3D Glasses**

T. Fukiage, T. Kawabe, S. Nishida

NTT, Japan

**3D2/
DES1 - 2
17:00** ***Invited* Extended Imagery Training for Baseball Batting through High-Reality Virtual Space Using Head Mounted Display**

D. Mikami

NTT, Japan

**3D2/
DES1 - 3
17:20** ***Invited* An Interactive Fog Display to Express Adaptive Shape-Changing Flow**

*T. Koga, K. Otao**

Nat. Inst. of Tech., Tokuyama College, Japan

**Univ. of Tsukuba, Japan*

**3D2/
DES1 - 4
17:40** **A Miniaturized Multi-Layered Display System With Water Drops**

Y.-A. Kuo, Z.-W. Wang, H.-W. Chen, W.-C. Hsu, C.-Y. Chen*

Nat. Taiwan Univ. of S&T, Taiwan

**Bruvis Multi Media Creative, Taiwan*

Author Interviews

18:10 – 18:40

Thursday, December 13

14:20 - 16:50

Event Hall

Poster DESp1: Display Electronic Systems

DESp1 - 1 **Novel LCD Devices with Circular Hole in Active Area for Camera Integration**

X. Lan, Y. Huang, Y. Zhu, X. Wang, S. Lan, L. Bei, C. Deng, Z. Zhu, G. Lai, G. Chen, J. Li, L. Wang

Xiamen Tianma Microelect., China

- DESp1 - 2 An Improved Image Super-Resolution Method Based on Collaborative Interpolation Mechanism**
J. Zhu, Y. Wu, M.-J. Jou, B. Zhao
Shenzhen China Star Optoelect. Tech., China
- DESp1 - 3 FPGA Implementation for Computational Ghost Imaging**
I. Hoshi, T. Shimobaba, T. Kakue, T. Ito
Chiba Univ., Japan
- DESp1 - 4 Design of Highly Reliable a-Si Gate Driving Circuit for 32-in. SNB TFT-LCD Panel**
W.-Y. Li, Y.-f. Chou, J. Zhu, W. Shao, L.-Q. Shi, T.-H. Wang, X.-W. Lv, R.-L. Chen, S.-P. Xi, Q.-S. Liu, C.-Y. Chiu
Shenzhen China Star Optoelect. Tech., China

14:20 - 16:50

Event Hall

Poster DESp2: Display Electronic Systems for Automotive
Special Topics of Interest on Automotive Displays

- DESp2 - 1 Image Processing Approach for Traffic Light Control Based on Traffic Area**
*R. Fernando, A. Jayasiri**
Univ. of Kelaniya, Sri Lanka
**Univ. of the Visual & Performing Arts, Sri Lanka*

14:20 - 16:50

Event Hall

Poster DESp3/VHFp7: Backlight Technology

- DESp3/ VHFp7 - 1 Waving-Hand Steganography Embedded in a Backlight of an LCD**
S. Morita, A. Tsuji, H. Yamamoto*
Utsunomiya Univ., Japan
**Tokushima Univ., Japan*
- DESp3/ VHFp7 - 2 Convolutional Neural Network Driven Localized Backlight Dimming Strategy for Liquid Crystal Displays**
J. Jo, J. S. Park, J. W. Soh, N. I. Cho*
Seoul Nat. Univ., Korea
**Samsung Elect., Korea*

Friday, December 14

9:00 - 10:20

Room 133

DES2/UXC4: AI Applied to Display
Special Topics of Interest on Automotive Displays

Chair: T. Sato, AIST, Japan
 Co-Chair: Y. Ando, Fuji Xerox, Japan

DES2/ UXC4 - 1 ***Invited*** **3D Image Processing Based on Machine Learning**
 9:00 *T. Fujii*
 Nagoya Univ., Japan

DES2/ UXC4 - 2 ***Invited*** **Road Scene Understanding Using Image Recognition for Safety and Autonomous Driving**
 9:20 *T. Watanabe*
 Toshiba, Japan

DES2/ UXC4 - 3 ***Invited*** **Font Style Transfer Using Deep Neural Networks**
 9:40 *W. Shimoda, A. Narusawa, K. Yanai*
 Univ. of Electro-Commun., Japan

DES2/ UXC4 - 4 **TalkingDraw: Support Drawing Diagrams in Talking with Voice and Pen**
 10:00 *X. Xu, H. Shibata*
 Fuji Xerox, Japan

----- Break -----

10:40 - 12:00

Room 133

DES3: Micro-LED and OLED Driving

Chair: H. Okumura, Toshiba, Japan
 Co-Chair: R. Oke, Panasonic Liquid Crystal Display, Japan

DES3 - 1 ***Invited*** **Stability of Micro-LED Pixel Circuit Based on Amorphous InGaZnO Thin Film Transistors and Digital Driving Theme**
 10:40 *C. Dong, W. Zhang, Y. Zhou, L. Zhou, Y. Zhang, H. Xie*
 Shanghai Jiao Tong Univ., China

DES3 - 2 **High-Efficiency Backlight Module Optical Design**
 11:00 *C. C. Weng, C. Y. Li, C. L. Huang, P. S. Hu, J. W. Pan*
 Nat. Chiao Tung Univ., Taiwan

**DES3 - 3 P-Type Gate Driver Circuit Using One Driving TFT
11:20 for AMOLED Pixel Circuit**

*P.-T. Lee, C.-H. Tseng, C.-L. Lin
Nat. Cheng Kung Univ., Taiwan*

**DES3 - 4 A High-Efficient Compression Algorithm for
11:40 AMOLED Compensation Table**

*L. Cheng, Y. Deng, Y. Jin, M.-J. Jou
Shenzhen China Star Optoelect. Tech., China*

Author Interviews

12:00 – 12:30

----- Lunch -----

13:10 - 14:30

Room 222

**3D5/DES4: Display Systems for Automotive
*Special Topics of Interest on Automotive Displays***

Chair: K. Morita, Chuo Univ., Japan

Co-Chair: H. Yamamoto, Utsunomiya Univ., Japan

3D5/ *Invited* Super Multi-View 3D Head-Up Display

**DES4 - 1
13:10**

*Y. Takaki
Tokyo Univ. of A&T, Japan*

**3D5/ Low Crosstalk Glassless 3D HUD with Expanded
DES4 - 2 Viewing Area in All Directions Using Novel Eye
13:30 Tracking System**

T. Matsumoto, K. Kusafuka, H. Nakamura, G. Hamagishi*,
K. Yoshimoto*, H. Takahashi*
Kyocera, Japan
Osaka City Univ., Japan

**3D5/ 10.4-in. Ultra-Slim a-Si TFT LCD with Tracking Gate
DES4 - 3 Line in Pixel Technology for Automotive Display**

13:50

*C.-H. Kuan, J.-S. Liao, C.-Y. Du, C.-C. Chang, H.-H. Chen,
H.-M. Su, W.-Z. Zeng
Chunghwa Picture Tubes, Taiwan*

**3D5/ An Automotive Grade Local Dimming Display
DES4 - 4 System**

14:10

*W.-F. Chang, C.-L. Li, F.-H. Tsao, H.-H. Chen, H.-M. Su,
W.-T. Tseng, S.-H. Yang, Y. Zhang
Chunghwa Picture Tubes, Taiwan*

----- Break -----

Author Interviews

16:20 – 16:50

14:50 - 16:00

Room 133

DES5: 8K Systems

Chair: R. Oke, Panasonic Liquid Crystal Display, Japan
 Co-Chair: S. Takamura, NTT, Japan

DES5 - 1 14:50 *Invited* 8K UHD TV Imaging Technology: Cameras and Image Sensors

K. Tomioka
NHK, Japan

DES5 - 2 15:15 *Invited* HEVC Software Media Player for Ultra-High-Quality Video: 8K and Beyond

M. Alvarez-Mesa, C. C. Chi
Spin Digital Video Techs. Germany

DES5 - 3 15:40 *Color Sequential Display with High Resolution Backlights*

G. Li, Y. Zhang, J. Wang, D. Geng, J. Tang
Southeast Univ., China

Author Interviews

16:20 – 16:50

Supporting Organizations:

Special Interest Group on Mixed Reality (SIG-MR), The Virtual Reality Society of Japan
 Technical Committee on Image Engineering (IE), Information and Systems Society, IEICE
 Technical Group on Information Sensing Technologies (IST), The Institute of Image Information and Television Engineers, ITE Nagoya Section, IEEE
 Technical Group on Information Display, ITE
 Technical Committee on Electronic Information Displays (EID), Electronics Society, IEICE
 The Society of Automotive Engineers of Japan

SPECIAL EVENT**PROJECTION MAPPING**

Live demonstrations of leading-edge technologies

Wednesday, Dec. 12 – Friday, Dec. 14, 2018

Room 221 (2F, Building 2)

Nagoya Congress Center

Workshop on Flexible Electronics

Wednesday, December 12

13:20 - 13:25

Room 222

Opening

Opening Remarks

13:20

T. Kamata, AIST, Japan

13:25 - 14:40

Room 222

FLX1: Wearable Sensors and Devices

Chair: T. Kamata, AIST, Japan

Co-Chair: T. Nagase, Osaka Pref. Univ., Japan

FLX1 - 1 *Invited* **Novel Smart Apparel Technology Based on Stretchable Electronics and Its Applications**

13:25

I. Amimori, O. Sawanobori, M. Nakajima

Xenoma, Japan

FLX1 - 2 *Invited* **Flexible Self-Sufficient Energy System for Wearable Electronics**

13:50

T. Tomono

Toppan Printing, Japan

FLX1 - 3 *Invited* **Development of Flexible Sheet Sensor for Evaluating Wind Pressure Distribution**

14:15

S. Kanazawa, H. Ushijima

AIST, Japan

----- Break -----

IDW '19

The 26th International Display Workshops

Nov. 27 - 29, 2019

Sapporo Convention Center

Sapporo, Japan

<http://www.idw.or.jp/>

16:40 - 17:45

Reception Hall 1

FLX2: Organic Electronics Technologies

Chair: M. Ito, Toppan Printing, Japan

Co-Chair: H. Endo, NEC, Japan

**FLX2 - 1 *Invited* Development of Polymer Semiconductors
Towards Simpler Fabrication Process in Flexible
Electronics**

16:40

T. Murase, Y. Takeda, R. Shiwaku*, H. Matsui*, D. Kumaki*,
S. Tokito***Mitsubishi Chem., Japan***Yamagata Univ., Japan***FLX2 - 2 Manufacture of Organic Transistors on Large-Area
Flexible Substrate Using Direct Imaging Exposure
System by Wet Process Suitable for Roll to Roll
Production**

17:05

*S. Koizumi, M. Hori, Y. Hayashida, K. Naito, S. Kawabata,
Y. Ishigaki, M. Nakazumi, K. Iwahori, Y. Kito**Nikon, Japan***FLX2 - 3 Memristive Self-Rectifying Organic Junctions and
Devices**

17:25

*C.-H. Kim**Gachon Univ., Korea***Author Interviews**

18:10 – 18:40

Thursday, December 13

14:20 - 16:50

Event Hall

Poster FLXp1: Flexible Electronics Technologies**FLXp1 - 1 Flexible Oxide Thin-Film Transistor with High
Process Temperature by Means of Peel-off and
Transfer Method**

FLXp1 - 1

J. B. Ko, S.-H. Lee, T.-I. Lee, T.-S. Kim, H. Kim,
S.-H. K. Park**KAIST, Korea***DAVO C&M, Korea***FLXp1 - 2 Study of Poly(3-hexylthiophene) Transistors with
Different Blending Materials**

FLXp1 - 2

*Y. W. Wang, W. C. Su, M. T. Chung, T. M. Chen**Nat. Changhua Univ. of Education, Taiwan*

- FLXp1 - 3** **Organic-inorganic Hybrid Gate Dielectrics with Improved Dielectric Properties via UV Treatment for Flexible Electronics**
J. S. Hur, J. O. Kim, H. A. Kim, J. K. Jeong
Hanyang Univ., Korea
- FLXp1 - 4** **Ultrathin Flexible Organic Thin Film Transistors by Water-Debonding Process**
J. M. Kim, J. Oh, K.-M. Jung, K. C. Park^{}, J.-H. Jeon^{**}, Y.-S. Kim*
Sungkyunkwan Univ., Korea
^{*}*Konkuk Univ., Korea*
^{**}*Korea Aerospace Univ., Korea*
- FLXp1 - 5** **Folding Stability of Organic-Inorganic Multilayer Near Neutral Plane**
S. Ham, S. Kim, S. Cho
Sungkyunkwan Univ., Korea
- FLXp1 - 6** **Thin Film Encapsulation with Ultra-High Mechanical Property**
K. Hu, X. Li, Y. Li, S. Liu, P. Dang, Z. Duan^{}, X. Zhu^{*}, X. Huang^{*}*
Kunshan New Flat Panel Display Tech. Ctr, China
^{*}*Kunshan Govisionox Optoelect., China*
- FLXp1 - 7** **A Study on a Characteristics of Hybrid Window Substrate for Foldable OLED Display**
J.-K. Choi, B.-M. Park, K.-Y. Han
Dankook Univ., Korea
- FLXp1 - 8** **Deposition and Characterization of ITO Thin Films on Cellulose Nanofiber Paper**
H. Tambo, M. Nasuno, T. Obata, S. Iwatsubo
Toyama Ind. Tech. R&D Ctr., Japan

17:10 - 18:15

Reception Hall 2

FLX3/LCT5: Advanced Flexible Displays

Chair: M. Kimura, Nagaoka Univ. of Tech., Japan

Co-Chair: T. Eguchi, Sumitomo Bakelite, Japan

**FLX3/
LCT5 - 1
17:10** ***Invited* Technology Advances for Flexible Transparent AMOLED and Electronics**

*M.-H. Yang, Y.-T. Tsai, J.-C. Ho, S. Chiu, C.-C. Lee**ITRI, Taiwan*

**FLX3/
LCT5 - 2
17:35** **6.9-in. Flexible Transparent Display Using by SALC
Technology and Applications**
C. C. Chiou, C. H. Chen, J. T. Lian
Chunghwa Picture Tubes, Taiwan

**FLX3/
LCT5 - 3
17:55** **The Research and Design of Transparency Hole
Screen**
*X. Zhou, G. Lai, H. Wu, H. Zhou, J. Liu, X. Yang, X. Lan,
Y. Yang, P. Shen, J. Li*
Xiamen Tianma Microelect., China

Author Interviews

18:40 – 19:10

Friday, December 14**9:00 - 10:05****Reception Hall 2****FLX4: Advanced Process and Evaluation Technologies**

Chair: Y. Mishima, JAPER, Japan

Co-Chair: K. Uemura, Nippon Steel & Sumitomo Metal, Japan

**FLX4 - 1 *Invited* High Performance Flexible TFT Technology
9:00 Prepared by Low Temperature Process**
J. Peng
South China Univ. of Tech., China

**FLX4 - 2 Analysis of Mechanical Stresses on Foldable
9:25 Devices**
N. Ando, K. Hyodo, H. Sasaki, Y. Ota
YUASA Sys., Japan

**FLX4 - 3 R2R Fabrication of Thin-film Coatings on Ultra-Thin
9:45 Glass for Flexible Devices**
M. Junghaehnel, T. Preussner, J. Westphalen, M. Fahland
Fraunhofer Inst. for Organic Elect., Germany

----- Break -----

10:40 - 12:00

Reception Hall 2

**FLX5/FMC7: Advanced Materials and Components for
Flexible Electronics**

Chair: T. Furukawa, Yamagata Univ., Japan

Co-Chair: A. Fujita, JNC, Japan

**FLX5/
FMC7 - 1** **Thin and High-Quality ITO/Ag Alloy/ITO Structure for
Display Electrodes**

10:40

*Y. Toshimori, S. Nonaka, T. Nagase**Mitsubishi Materials, Japan*

**FLX5/
FMC7 - 2** **Improvement of Mura and CD by Adjusting Black
Matrix Component in G8.6 TFT-LCD Color Filter**

11:00

*R. Wang, D. Zhang, D. Lei, X. Wang, J. Hung, J. Hsu,
W. Chen, Y. Lu**Chongqing HKC Optoelect. Tech., China*

**FLX5/
FMC7 - 3** **Black Photoresist Achieving Patterns with Extremely
Low Reflection and Smooth Line Edge on Flexible
Substrate**

11:20

*A. Igawa, M.-A. Hsu***eChem Solutions Japan, Japan***Consistent Elect. Materials, Taiwan*

**FLX5/
FMC7 - 4** **The Effects of Surfactants and Dielectrophoresis on
the Electrical Property of Single-Wall Carbon
Nanotube Films**

11:40

*C. Wei, Z.-L. Yan**Tatung Univ., Taiwan***Author Interviews**

12:00 – 12:30

----- Lunch -----

Reception

Wednesday evening

Dec. 12, 2018

19:00 – 21:00

Atsutajingu Kaikan, Atsuta Shrine
(1F, North Building)

Atsutajingu Kaikan is located 2.3km away from
Nagoya Congress Center, approx. 10min. by car.

See page 14 for details

Workshop on Touch Panels and Input Technologies

Wednesday, December 12

13:20 - 13:25

Room 224

Opening

Opening Remarks

13:20

H. Hashimoto, Citizen Watch, Japan

13:25 - 14:35

Room 224

INP1: Haptic Technologies *Special Topics of Interest on Haptics Technologies*

Chair: Y. Tanaka, Nagoya Inst. of Tech., Japan

Co-Chair: H. Ishizuka, Kagawa Univ., Japan

INP1 - 1 *Invited* **Smart Rubber Technology and Its Applications**

13:25

K. Nakano

Sumitomo Riko, Japan

INP1 - 2 *Invited* **Development of Electro-vibration Tactile Displays with Microfabrication and Digital Fabrication**

13:50

H. Ishizuka

Kagawa Univ., Japan

INP1 - 3 **Toward the Modeling of Tactile Sensation on Electrostatic Tactile Display**

14:15

H. Tomita, S. Takahashi, S. Saga^{}, S. Vasilache, H. Kajimoto^{**}*

Univ. of Tsukuba, Japan

^{}Kumamoto Univ., Japan*

*^{**}Univ. of Electro-Commun., Japan*

----- Break -----

15:00 - 16:15

Room 224

INP2: 3D Sensing for Automotive HMI
Special Topics of Interest on Automotive Displays

Chair: R. Ishiyama, NEC, Japan
Co-Chair: N. Mishima, Toshiba, Japan

INP2 - 1 ***Invited*** **Depth from Asymmetric Defocus Using**
15:00 **Color-Filtered Aperture Towards One Shot Depth**
Acquisition by Single Camera

N. Mishima, T. Sasaki
Toshiba, Japan

INP2 - 2 ***Invited*** **Hybrid Time-of-Flight Range Image Sensors**
15:25 **Using High-Speed Multiple-Tap Charge Modulation**
Pixels

S. Kawahito^{},^{**}, K. Yasutomi^{*}, K. Mars^{*}, K. Kagawa^{*},*
*S. Aoyama^{**}*
^{}Shizuoka Univ., Japan*
*^{**}Brookman Tech., Japan*

INP2 - 3 ***Invited*** **3-D Scan and Image Recognition of Face**
15:50

R. Ishiyama
NEC, Japan

----- Break -----

16:40 - 18:15

Room 224

INP3: In-Cell Touch Panels and Automotive HMI
Special Topics of Interest on Automotive Displays

Chair: H. Haga, Tianma Japan, Japan
Co-Chair: N. Takada, Japan Display, Japan

INP3 - 1 ***Invited*** **Capacitive Touch Panel with Non-Conductive**
16:40 **and Conductive Object Distinction for In-Cell LCD**
and OLED

J. D. D. B. Mugiraneza, T. Maruyama, K. Kida,
S. Yamagishi, T. Yamamoto, Y. Sugita, H. Fukushima,
H. Kawamori
Sharp, Japan

INP3 - 2 ***Invited*** **Large Size In-Cell Capacitive Touch Panel**
17:05 **and Force Touch Development for Automotive**

N. Takada, Y. Kakinoki, T. Tanaka, C. Tanaka, Y. Teranishi,
T. Nakanishi, N. Goto
Japan Display, Japan

INP3 - 3 ***Invited* "In-Cell" Force Touch Technology in the
17:30** **OLED Display Panel**

L. Liu, F. Lu, S. Ma, C. Ma, Q. Yao

Tianma Micro-Elect., China

INP3 - 4 **Knob on Display: Movable Ring-Shaped Dial
17:55** **Interaction for Automotive Center Display**

Y. Sasaki

Mitsubishi Elec., Japan

Author Interviews

18:15 – 18:40

Thursday, December 13

9:00 - 10:15

Room 224

INP4: AR and Interactive Systems
Special Topics of Interest on AR/VR and Hyper Reality

Chair: T. Komuro, Saitama Univ., Japan

Co-Chair: Y. Ban, Univ. of Tokyo, Japan

INP4 - 1 ***Invited* High Precision and High Sensitivity Sheet
9:00** **Sensor by Printing Technology**

T. Miyoshi^{}, H. Kondoh^{*}, S. Nishi^{*}, T. Kamata^{*,**}*

^{}JAPER, Japan*

*^{**}AIST, Japan*

INP4 - 2 ***Invited* Illusion Based Shape Display Using the
9:25** **Visuo-Haptic Interaction**

Y. Ban

Univ. of Tokyo, Japan

INP4 - 3 ***Invited* 3D User Interfaces Based on AR/VR
9:50**

T. Komuro

Saitama Univ., Japan

----- Break -----

Author Interviews

10:40 – 11:10

----- Lunch -----

17:10 - 17:55

Room 224

INP5: Fingerprint Sensors and Secure Devices
Special Topics of Interest on Automotive Displays

Chair: D. Suzuki, Japan Display, Japan

Co-Chair: K. Yamazaki, Corning Japan, Japan

INP5 - 1 *Invited* Glass-Based Capacitive Fingerprint Sensor
17:10 Package

*D. Suzuki, T. Uehara, Y. Suzuki, F. Nakano, Y. Ozeki,
H. Miyake*

Japan Display, Japan

INP5 - 2 Near Filed Communication (NFC) Antenna on
17:35 Display Integrated on Touch In-Cell (TIC) Panel

*C.-J. Liu, J. Liao, C.-Y. Hsu, H.-H. Chen, H.-M. Su,
W.-T. Tseng*

Chunghwa Picture Tubes, Taiwan

Author Interviews

18:40 – 19:10

Supporting Organizations:

Human Interface Society

Technical Group on Information Sensing Technologies, ITE

State of the Technologies in Expression Association

Holographic Display Artists and Engineers Club (HODIC),

The Optical Society of Japan

Technical Committee on Haptics, System Integration Division,

The Society of Instrument and Control Engineers

3DSA 2018

The 10th International Conference on 3D Systems and Applications

Taipei World Trade Center

Nangang Exhibition Hall

Taipei, Taiwan

Aug. 29 – 30, 2018

<http://cf.tl.ntu.edu.tw/web/2018/3dsa2018/index.php>

IDW '18 COMMITTEES

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	T. Urano	Nippon Television Network
Representative (SID):	A. Silzars	NORTHLIGHT DISPLAYS
	H. Okumura	Toshiba
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	K. Ishikawa	Tokyo Tech
	Y. Kijima	Huawei Techs. Japan
	M. Kimura	Ryukoku Univ.
	M. Omodani	Tokai Univ.
	T. Tsujimura	Konica Minolta Pioneer OLED
Auditor:	M. Date	NTT

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	A. Ghosh	eMagin, USA
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	H.-S. Kwok	Hong Kong Univ. of S&T, Hong Kong
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PH	N. Miura	Meiji Univ.
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3D	M. Katayama	NHK
VHF	Y. Imai	Mitsubishi Elec.
PRJ	K. Ohara	Marubun
EP	T. Fujisawa	DIC
MEET	J. Moon	Shizuoka Univ.
DES	Y. Oyamada	Tottori Univ.
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	G. Zhou	South China Normal Univ.

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S. Tanaka	Tohoku Univ.
F. Templier	CEA-LETI
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S. Uchikoga	Toshiba
J. Van Derlofske	3M
Q. Yan	Sichuan COC Display Devices
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	R. Hattori	Kyushu Univ.
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	T. Kishigami	Mitsubishi Elec.
	H. Koo	Minghsin Univ. of S&T
	O. Kwon	Hanyang Univ.
	K. Makita	Canon
	K. Morita	Chuo Univ.
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	R. Oke	Panasonic Liquid Crystal Display
	S. Ono	Apple
	A. Sakaigawa	Huawei Techs. Japan
	T. Sato	AIST
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	K. Goda	Sanyo-Onoda City Univ.
	H. Hirata	Toray Eng.
	M. Ito	Toppan Printing
	M. Kimura	Nagaoka Univ. of Tech.
	H. Maeda	Dai Nippon Printing
	A. Miyamoto	Univ. of Tokyo
	T. Nagase	Osaka Pref. Univ.
	M. Nakata	NHK
	A. Nakazawa	AGC
	T. Sekitani	Osaka Univ.

T. Shiro	Teijin
T. Tomono	Toppan Printing
K. Uemura	Nippon Steel & Sumitomo Metal
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Topical Session on User Experience and Cognitive Engineering

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	S. Ono	Kagoshima Univ.
	S. Saga	Kumamoto Univ.
	K. Sugaya	Ibaraki Univ.

Special Topics of Interest on Oxide-Semiconductor TFT

Facilitator:	M. Kimura	Ryukoku Univ.
Program Committee:		
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FMC	K. Tamai	AGC
FLX	M. Nakata	NHK

Special Topics of Interest on Quantum Dot Technologies

Facilitator:	T. Ikuta	JNC
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PH	N. Miura	Meiji Univ.
OLED	T. Shimizu	NHK
MEET	J. Moon	Shizuoka Univ.

Special Topics of Interest on AR/VR and Hyper Reality

Facilitator:	Y. Oyamada	Tottori Univ.
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3D	M. Tsuchida	NTT
VHF	T. Shibata	Tokyo Univ. of Social Welfare

PRJ	K. Ohara	Marubun
DES	Y. Oyamada	Tottori Univ.
INP	T. Sato	ZEON
UXC	H. Shibata	Fuji Xerox

Special Topics of Interest on Automotive Displays

Facilitator: K. Morita Chuo Univ.

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OLED	T. Tsuji	Pioneer
3D	M. Tsuchida	NTT
VHF	Y. Imai	Mitsubishi Elec.
PRJ	K. Ohara	Marubun
DES	K. Morita	Chuo Univ.
FLX	Y. Uraoka	NAIST
INP	Y. Sugita	Sharp
UXC	H. Shibata	Fuji Xerox

Special Topics of Interest on Wide Color Gamut and Color Reproduction

Facilitator: K. Takatori Huawei Techs. Japan

Program Committee:

LCT	S. Oka	Japan Display
FMC	K. Tamai	AGC
3D	M. Katayama	NHK
VHF	Y. Imai	Mitsubishi Elec.
MEET	J. Moon	Shizuoka Univ.
DES	T. Fujine	Sharp

Special Topics of Interest on Haptics Technologies

Facilitator: H. Okumura Toshiba

Program Committee:

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DES	H. Okumura	Toshiba
INP	M. Sato	Tokyo Tech
UXC	H. Shibata	Fuji Xerox

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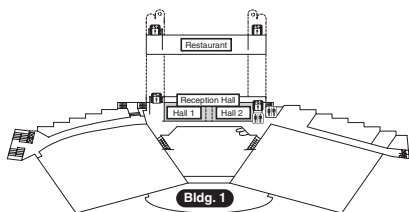
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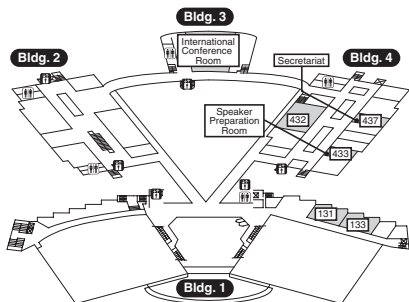
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CONFERENCE SITE OVERVIEW

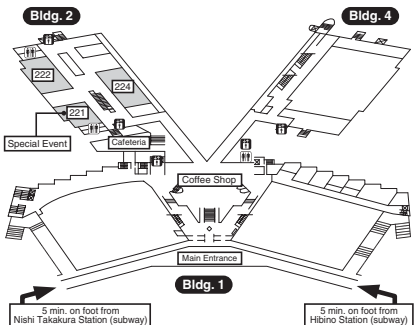
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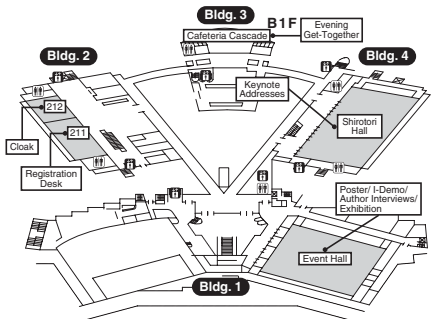
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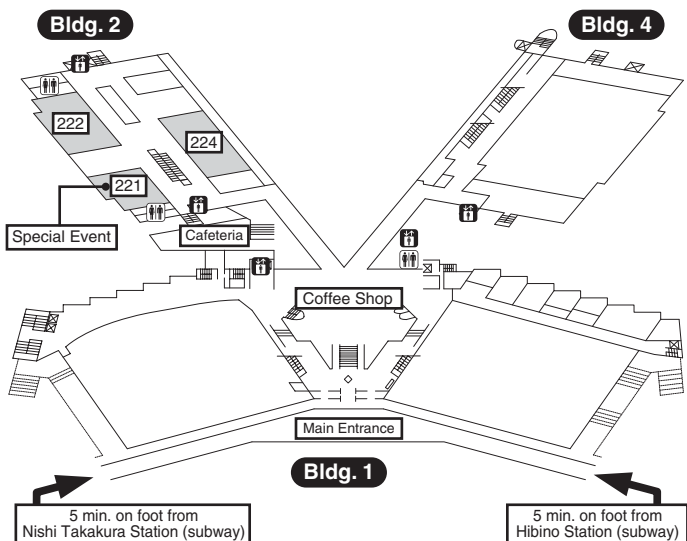
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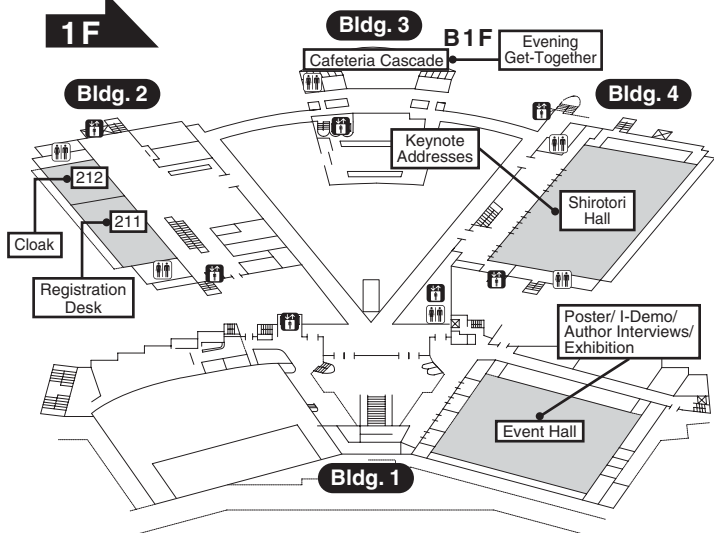
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FLOOR MAP

2F



1F



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How to find your room

2



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3



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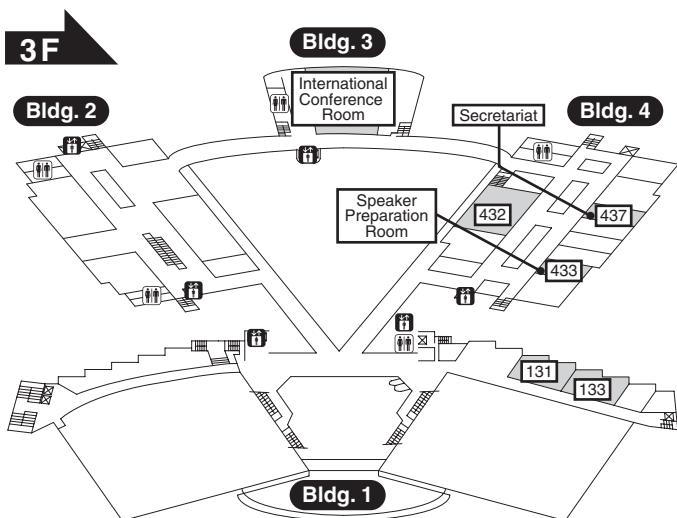
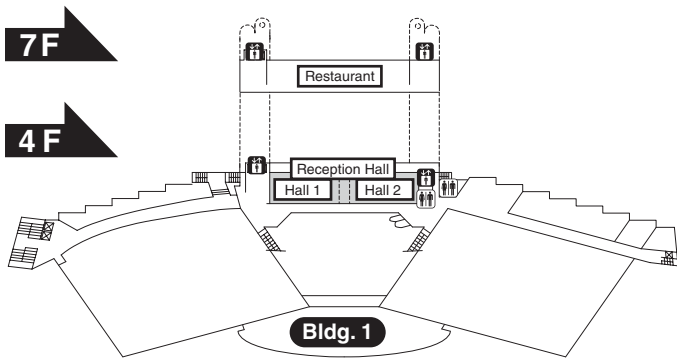
4



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N



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IDW '18 The 25th International Display Workshops

December 12-14, 2018 Nagoya Congress Center, Nagoya, Japan

Registration

(1) Registration Fees

The registration fee includes admission to the conference and a USB flash drive of the proceedings. In addition, a printed Final Program including abstracts of each paper will be provided at the conference site. No refunds will be made on and after November 3, 2018.

	ITE/SID/ ASO* ¹ Member* ²	Non- Member* ³	Student* ⁴	Life Member of ITE/SID* ⁵
Until November 2	¥40,000	¥50,000	¥13,000	¥13,000
On and After November 3	¥50,000	¥60,000	¥15,000	¥15,000

*1 ASO: Academic Supporting Organizations. See p.16 as well as "Supporting Organizations" at the end of each workshop section in the Advance Program.

*2 Individual member

*3 If you intend to join either ITE or SID, the one year membership fee will be subsidized by the IDW '18 Committee.

*4 Full-time Student. Photocopy of your student ID is required.

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Until November 2	¥8,000
On and After November 3	¥10,000

One free ticket will be provided to each invited speaker.

(3) Additional Proceedings (USB flash drive)

At the Conference Site	¥8,000
Airmail after the Conference	¥12,000
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(1) e-Registration (Deadline: November 30, 2018)

Access <http://www.idw.or.jp/regist.html>

(2) On-site

e-Registration: Until Nov. 30

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Room rates include breakfast, service charge, and 8% consumption tax.

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No. in map (p20)	Hotel Name	Phone	Rates (per person per night)			Internet Access		Nearest Train Station
			Single	Twin/Single occupancy	Twin/Double occupancy	LAN	Wi-Fi	
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2	Cypress Garden Hotel	+81-52-679-1661	¥12,000	¥22,000	¥11,500	Free	Free	3 min walk from the South Exit of Kanayama Station
3	Nagoya Kanayama Hotel	+81-52-322-1111	¥11,000	¥15,000	¥14,000	Free	Free	2 min walk from the North Exit of Kanayama Station
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		Bldg. 2	Bldg. 4		Bldg. 3	Bldg. 2		Bldg. 1						
		1F	1F	3F	3F	2F		3F		4F		1F		
Date	Room 211	Shirotori Hall	Room 432	International Conference Room	Room 222	Room 224	Room 131	Room 133	Reception Hall 1	Reception Hall 2	Event Hall			
Tue, Dec. 11	Registration 17:00 - 20:00		Evening Get-Together at Cafeteria Cascade (B1F, Bldg. 3) 18:00 - 20:00											
Wednesday, December 12	Registration 8:00 - 18:00	Opening, Keynote Address 9:30 - 11:50												
		Lunch												
		VHF1 13:20 - 14:30	OLED1 13:20 - 14:40	FLX1 13:20 - 14:40	INP1 13:20 - 14:35	FMC1 13:20 - 14:40	UXC1 13:20 - 14:25	AMD1 13:20 - 14:35	LCT1 13:20 - 14:20					
		Break												
		VHF2 15:00 - 16:20	OLED2 15:00 - 16:20	3D1 15:00 - 16:20	INP2 15:00 - 16:15	PRJ1/FMC2 15:00 - 16:25	EP1 15:00 - 16:20	AMD2 15:00 - 16:10	LCT2 15:00 - 16:00					
		Break												
		VHF3 16:40 - 18:10	OLED3 16:40 - 18:00	3D2/DES1 16:40 - 18:00	INP3 16:40 - 18:15	FMC3 16:40 - 18:00	EP2 16:40 - 17:55	FLX2 16:40 - 17:45	PRJ2/LCT3 16:40 - 18:00					
												Author Interviews 18:10 - 18:40		
Reception at Atsutajingu Kaikan (1F, North Bldg.) 19:00 - 21:00														
Thursday, December 13	Registration 8:00 - 18:00	VHF4 9:00 - 10:25	OLED4 9:00 - 10:20	PRJ3† 9:00 - 10:24	INP4 9:00 - 10:15	UXC2 9:00 - 10:15	EP3† 9:00 - 10:03	AMD3 9:00 - 9:50	LCT4/FMC4 9:00 - 10:20					
		Break												
										Author Interviews 10:40 - 11:10	LCTp,AMDp, OLEDp,PHp, MEETp 10:40 - 13:10	Innovative Demonstration Session 10:40 - 16:50		
										FMCp,PRJp, VHFp,DESp, 3Dp,EPp,FLXp 14:20 - 16:50				
		Break												
		PH1 17:10 - 18:40	MEET1 17:10 - 18:55	3D3 17:10 - 18:30	INP5 17:10 - 17:55	FMC5 17:10 - 18:30	EP4/UXC3 17:10 - 18:35	AMD4 17:10 - 18:25	FLX3/LCT5 17:10 - 18:15					
												Author Interviews 18:40 - 19:10		
		Friday, December 14	Registration 8:00 - 13:00	OLED5 9:00 - 10:20	MEET2 9:00 - 10:20	VHF5/3D4 9:00 - 10:05	PRJ4 9:00 - 10:20	FMC6 9:00 - 10:20	DES2/UXC4 9:00 - 10:20	AMD5 9:00 - 10:05	FLX4 9:00 - 10:05			
Break														
PH2/OLED6 10:40 - 12:00	MEET3 10:40 - 12:00			VHF6 10:40 - 12:05	PRJ5 10:40 - 11:40	LCT6 10:40 - 11:40	DES3 10:40 - 12:00	AMD6 10:40 - 11:50	FLX5/FMC7 10:40 - 12:00					
										Author Interviews 12:00 - 12:30				
Lunch														
VHF7 13:10 - 14:40	MEET4 13:10 - 14:30			3D5/DES4 13:10 - 14:30	PRJ6 13:10 - 14:10	FMC8 13:10 - 14:30	OLED7 13:10 - 14:10	AMD7 13:10 - 14:35	LCT7 13:10 - 14:30					
Break														
VHF8 14:50 - 15:55	MEET5 14:50 - 15:50			3D6 14:50 - 16:10	PRJ7 14:50 - 16:30	EP5 14:50 - 15:55	DES5 14:50 - 16:00	AMD8 14:50 - 15:55	LCT8 14:50 - 16:10					
										Author Interviews 16:20 - 16:50				

† Including Short Presentations

IDW '18 Session Navigator

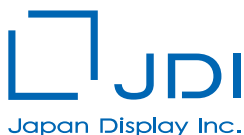
	Wednesday, December 12				Thursday, December 13						Friday, December 14					
	PM			A.I.	AM	A.I.	AM Poster	PM Poster	PM	A.I.	AM		A.I.	PM		A.I.
	13:20-14:40	15:00-16:20	16:40-18:00	18:10-18:40	9:00-10:20	10:40-11:10	10:40-13:10	14:20-16:50	17:10-18:30	18:40-19:10	9:00-10:20	10:40-12:00	12:00-12:30	13:10-14:30	14:50-16:10	16:20-16:50
User Experience & Cognitive Engineering	Room 133			Event Hall	Room 131	Event Hall			Room 133	Event Hall	Room 133		Event Hall			
	Visual Experience			A.I.	Tangible Interface & Education	A.I.			Approaches to Ideal Replacement of Paper Media*	A.I.	AI Applied to Display*		A.I.			
3D/Hyper-Realistic Displays	Room 222			Event Hall				Event Hall	Room 222	Event Hall	Room 222		Event Hall	Room 222		Event Hall
		Display Systems for AR	Novel Display Systems*	A.I.				Posters	Autostereoscopic Display Systems	A.I.	Human Factors & Image Quality*		A.I.	Display Systems for Automotive*	Holography	A.I.
Active-Matrix Displays	Reception Hall 1			Event Hall	Reception Hall 1	Event Hall	Event Hall		Reception Hall 1	Event Hall	Reception Hall 1		Event Hall	Reception Hall 1		Event Hall
	8K Display	Active-Matrix Micro-LED Display		A.I.	Advanced Process OTFT	A.I.	Posters		High-Performance OTFT	A.I.	Emerging TFT	Oxide TFT: Device	A.I.	Oxide TFT: Stability & Fundamental (1)	Oxide TFT: Stability & Fundamental (2)	A.I.
Display Electronic Systems			Room 222	Event Hall				Event Hall			Room 133		Event Hall	Room 222	Room 133	Event Hall
			Novel Display Systems*	A.I.				Posters			AI Applied to Display*	Micro-LED & OLED Driving	A.I.	Display Systems for Automotive*	8K Systems	A.I.
Emissive Technologies							Event Hall	Room 432	Event Hall	Int. Conf. Room		Event Hall	International Conference Room		Event Hall	
							Posters	Phosphors for Display & Lighting Applications	A.I.	Micro/NanoDisplays & Nanotechnology Application (1)	Micro/NanoDisplays & Nanotechnology Application (2)	A.I.	EL Quantum Dots Technologies	Emerging Quantum Dots & Nanotechnologies	A.I.	
											Room 432	Event Hall				
											QD Phosphors & Devices*	A.I.				
e-Paper	Room 133			Event Hall	Room 133	Event Hall		Event Hall	Room 133	Event Hall					Room 131	Event Hall
		Expansion of Electrophoretic Displays	Emerging e-Paper Technologies	A.I.	Advance of Electrochromic Displays	A.I.		Posters	Approaches to Ideal Replacement of Paper Media*	A.I.					Various Challenges for e-Paper	A.I.
Flexible Electronics	Room 222		Reception Hall 1	Event Hall				Event Hall	Reception Hall 2	Event Hall	Reception Hall 2		Event Hall			
	Wearable Sensors & Devices		Organic Electronics Technologies	A.I.				Posters	Advanced Flexible Displays*	A.I.	Advanced Process & Evaluation Technologies	Advanced Materials & Components for Flexible Electronics*	A.I.			
Interactive Technologies	Room 224			Event Hall	Room 224	Event Hall			Room 224	Event Hall						
	Haptic Technologies	3D Sensing for Automotive HMI	In-Cell Touch Panels & Automotive HMI	A.I.	AR & Interactive Systems	A.I.			Fingerprint Sensors & Secure Devices	A.I.						
Human Factor	Room 432			Event Hall	Room 432	Event Hall		Event Hall			Room 222		Event Hall	Room 432		Event Hall
	High Dynamic Range	Color Quality	Physiological & Psychophysical Factors	A.I.	Ergonomics for Automotive Applications	A.I.		Posters			Human Factors & Image Quality*	Virtual Reality	A.I.	Color Gamut Metrology	Color Vision	A.I.
Liquid-Crystal Technologies	Reception Hall 2		Reception Hall 2	Event Hall	Reception Hall 2	Event Hall	Event Hall		Reception Hall 2	Event Hall		Room 131	Event Hall	Reception Hall 2		Event Hall
	Liquid Crystal Alignment Technology	Novel LCD Technologies	LC-Based Eye Devices*	A.I.	New Materials & Components for LCDs*	A.I.	Posters		Advanced Flexible Displays*	A.I.		Wide Color Gamut LCDs	A.I.	Liquid Crystal Phase Shifter	Liquid Crystal Applications	A.I.
Manufacturing, Process & Equipment	Room 131			Event Hall				Event Hall	Room 131	Event Hall						
	MicroLED Display			A.I.				Posters	Manufacturing	A.I.						
Materials & Components	Room 131			Event Hall	Reception Hall 2	Event Hall		Event Hall			Room 131	Reception Hall 2	Event Hall	Room 131		Event Hall
		Waveguide for AR-Near Eye Display*	Display Optics	A.I.	New Materials & Components for LCDs*	A.I.		Posters			Light Polarizing Technologies	Advanced Materials & Components for Flexible Electronics*	A.I.	Advanced Materials		A.I.
MEMS							Event Hall	Int. Conf. Room	Event Hall							
							Posters	Novel Materials, Fundamental Components & Process Technologies	A.I.							
Organic Light-Emitting Displays & Organic Devices	International Conference Room			Event Hall	Int. Conf. Room	Event Hall	Event Hall				Room 432		Event Hall	Room 133		Event Hall
	OLED Materials	OLED Devices	OLED Soluble Materials & Process Technologies	A.I.	OLED Display	A.I.	Posters				OLED Device Technology	QD Phosphors & Devices*	A.I.	OLED Advanced Technology		A.I.
Projection & Large Area Displays		Room 131	Reception Hall 2	Event Hall	Room 222	Event Hall		Event Hall			Room 224		Event Hall	Room 224		Event Hall
		Waveguide for AR-Near Eye Display*	LC-Based Eye Devices*	A.I.	Light Source	A.I.		Posters			Wearable	Automotive Displays & Sensors	A.I.	Projection Applications	Projection Mapping	A.I.

A.I.: Author Interviews
* Joint Session

IDW '18 Special Topics of Interest Navigator

		Oxide-Semiconductor TFT		Quantum Dot Technologies			AR/VR & Hyper Reality				Automotive Displays					Wide Color Gamut & Color Reproduction			Haptics Technologies
		Reception Hall 1	Event Hall	International Conference Room	Room 432	Event Hall	Room 131	Room 222	Room 224	Event Hall	Room 133	Room 222	Room 224	Room 432	Event Hall	Room 131	Room 432	Event Hall	Room 224
Wed., Dec. 12	PM																		INP1: Haptic Technologies 13:20 - 14:35
							PRJ1/FMC2: Waveguide for AR-Near Eye Display 15:00 - 16:25						INP2: 3D Sensing for Automotive HMI 15:00 - 16:15						
														INP3: In-Cell Touch Panels & Automotive HMI 16:40 - 18:15					
Thu., Dec. 13	AM		AMDp1: Poster 10:40 - 13:10			PHp1,OLEDp2 MEETp1 : Poster 10:40 - 13:10								VHF4: Ergonomics for Automotive Applications 9:00 - 10:25					
	PM														VHFp3,DESp2 : Poster 14:20 - 16:50				FMCp5,VHFp2: Poster 14:20 - 16:50
Fri., Dec. 14	AM				OLED5:OLED Device Technology 9:00 - 10:20			PRJ4:Wearable 9:00 - 10:20		DES2/UXC4: AI Applied to Display 9:00 - 10:20									
	AM		AMD6: Oxide TFT: Device 10:40 - 11:50		PH2/OLED6:QD Phosphors & Devices 10:40 - 12:00			VHF6: Virtual Reality 10:40 - 12:05					PRJ5:Automotive Displays & Sensors 10:40 - 11:40			LCT6: Wide Color Gamut LCDs 10:40 - 11:40			
	PM		AMD7: Oxide TFT: Stability & Fundamental (1) 13:10 - 14:35		MEET4:EL Quantum Dots Technologies 13:10 - 14:30							3D5/DES4: Display Systems for Automotive 13:10 - 14:30					VHF7: Color Gamut Metrology 13:10 - 14:40		
	PM		AMD8: Oxide TFT: Stability & Fundamental (2) 14:50 - 15:55		MEET5:Emerging Quantum Dots & Nanotechnologies 14:50 - 15:50												VHF8: Color Vision 14:50 - 15:55		

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