Final Call for Papers

IDW ’21 - The 28th International Display Workshops

December 1-3, 2021
Virtual Conference
https://www.idw.or.jp/

FEATURES

IDW consists of workshops technically categorized into specialized domains playing important roles in the information display technology and its application. Each workshop organizes its own sessions, which consist of oral presentations by invited/contributing speakers and lightning talks. The conference will be held in a virtual format. Presenters and attendees can discuss via video/audio or text chat tools. The proceedings of IDW ’21 and recorded session videos will be available both during and after the conference until late January 2022. In addition, a few months after the conference, the proceedings will be provided as an online open-access archive and each paper will be given a unique DOI (Digital Object Identifier).

VIRTUAL CONFERENCE

The IDW ’21 as a virtual conference, which was very much acclaimed last year, will be further enhanced this year. The advantage of virtual conferences is not just that attractive presentations can be viewed easily through the internet without travelling far. Seamless access from the presentation sessions using Zoom to the breakout room as “Extended live Q&A” will be provided, where the speakers can not only discuss details but also demonstrate their own promotions. And to encourage questions and answers, a chat system like SNS provides fruitful discussions without worrying about the time difference.
Furthermore, optional discussion sessions called “Enhanced Discussion” will be planned, where a detailed explanation of the presentation and a demonstration using Zoom will be held.
We look forward to your submissions.

IDW ’21 Virtual Conference
- Online plenary, oral and lightning talk sessions
- Interactive live Q&As
- Optional session to publicize research results
- After the conference, recorded sessions will be available on the website until late January 2022.

The official language of the conference
- English

DEADLINES AND KEY DATES

Regular Paper

Submission of Technical Summary ---------- July 27, 2021
Acceptance Notification ---------- August 31, 2021
Presenter’s Registration ---------- October 5, 2021
Submission of Camera-Ready Manuscript --- October 5, 2021
Submission of Pre-recorded Video ------ November 11, 2021

Late-News Paper

Submission of Camera-Ready Manuscript
---------- September 28, 2021
Acceptance Notification ---------- October 19, 2021
Presenter’s Registration ---------- November 4, 2021
Submission of Pre-recorded Video ------ November 12, 2021

REGISTRATION FEES

	Until Nov. 4	On and after Nov. 5
Individual Member of ITE/SID/ASO*	¥30,000	¥35,000
Non-Member	¥40,000	¥45,000
Student	¥10,000	¥12,000
Life Member of ITE/SID	¥10,000	¥12,000

*ASO: Academic Supporting Organizations

Keynote Addresses

- **New World Explored by XR Services Evolved with 5G**
  Masashi Usami (KDDI)
- **Vision Science for Display Technologies**
  Shinya Nishida (Kyoto University)
- **Optical Metasurfaces for Display Technologies**
  Mark L. Brongersma (Stanford Univ.)

The titles are tentative.

Special Topics of Interest

- AR/VR and Hyper Reality
- Automotive Displays
- Micro/Mini LEDs
- Quantum Dot Technologies

Topical Session

- Artificial Intelligence and Smart Society

SPECIAL EVENT
“Future Trends in Image Information and Media Technology”

As a collaborative special event with ITE (Institute of Image Information and Television Engineers), the future trends in image information media technology related to display technology, will be held. It will give you some hints for considering the future of display technology.

1) Information sensing technology (camera, imaging, input technology) Junichi Akita (Kanazawa Univ.)
2) Video broadcasting technology Eiichi Murata (Kyoto Univ.)
3) Media Engineering Technology Shuhei Tarashima (NTT Communications)

PAPER SUBMISSION

INSTRUCTIONS FOR SUBMISSION OF TECHNICAL SUMMARY

Submit a Technical Summary in PDF format without any security options via the conference website:

https://www.idw.or.jp/authinfo.html

The authors must use the manuscript template, which is available on the conference website and follow the submission instructions given on the website and shown below. The Technical Summary will be used for review and can be a Camera-Ready Manuscript for the conference proceedings as it is, in the case that the paper is accepted. If necessary the manuscript can also be revised even after the acceptance notice. The abstract of the accepted papers will be published in the Final Program on the IDW website.

I. Technical Summary Guidelines

The manuscript must be formatted to A4-sized paper. The maximum number of pages for the manuscript is four including text and figures/tables/photographs, and at least two pages must be completed. Please follow the instructions and template file provided on the website (https://www.idw.or.jp/authinfo.html) to prepare the manuscript.

II. Online Submission

Access **https://www.idw.or.jp/authinfo.html**
Please note that invited speakers should submit the manuscript according to the submission guidelines from IDW secretariat.
The submission procedure consists of two steps:

(1) Account registration

Please click on the link "Create an Account". You will first be requested to create your author account and register your information, including e-mail address. An acceptance/reject notification will be sent to you via the registered e-mail address.

(2) Submission

To start your submission, please log in to the created account and then click on the button "New Submission". Register all authors' names, affiliations, the Scope/Special Topics of Interest that mostly closely match your work, presentation preferences, the paper title and the abstract. Next, upload the Technical Summary as a PDF file. Please confirm carefully that the paper title and the author information are correct before submitting, as the information you register will be used in all the conference records: Final Programs, the index of Proceedings, and DOI data for the online proceedings, with no change. When the paper is successfully submitted, a "Your submission has been received" message will appear on the screen and you will also receive a submission confirmation e-mail.

LATE-NEWS PAPERS

A limited number of late-news papers on very important new findings or developments will be accepted. Authors are requested to submit a 2-4 pages Camera-Ready Manuscript on A4-sized paper accompanied by an abstract. For the manuscript, at least two pages must be completed with text and figures/tables/photographs. Access the conference website (https://www.idw.or.jp/authinfo.html) and follow the submission instructions given there.

COPYRIGHT

The copyrights of your submitted camera-ready manuscript will be transferred to ITE and SID. The copyright terms and conditions are available on the conference website (https://www.idw.or.jp/copyright.pdf). However, copyrights of your recorded presentation will not be transferred.

FORMAT OF PRESENTATION

Accepted papers will be assigned by the program committee for either oral or lightning talk in the most suitable session. You can indicate your preferred format at the summary submission.

Presentation Type	Video	Live Q&A	Text Q&A	Extended Live Q&A
Oral	15 min	5 min	Optional	20 min
Lightning Talk	5 min	N/A	Mandatory	N/A

(1) Oral Sessions

Oral sessions will be live sessions with pre-recorded presentation videos and live Q&As. You are expected to attend the session. Immediately after the allotted session, a virtual room will be assigned to each presenter for an extended live Q&A where you can show your presentation slides.

(2) Lightning Talk Sessions

Pre-recorded presentation videos will be open to the conference attendees as soon as the conference begins. The presenters are required to communicate with attendees via the online chat communication tool.

Enhanced Discussion (option for all presenters)

We will provide individual virtual discussion rooms to facilitate face-to-face discussions. You can show your additional presentation slides and videos of your concept, prototypes and products related to your paper.
Note: The enhanced discussions may take place before your oral presentation.

All sessions will be recorded and available for conference attendees until late January 2022 except for extended live Q&A and enhanced discussions.

ACCEPTANCE

The authors will be notified of the results of their Technical Summary review via e-mail. Upon acceptance of the paper, the authors must prepare a Camera-Ready Manuscript to be published in the conference proceedings. The authors can use their Technical Summary as a Camera-Ready Manuscript if it meets the format. In addition, the authors must prepare a pre-recorded video of their presentation. Acceptance is subject to the following conditions. If these are not met, the Program Committee may withhold approval for your manuscript and remove your presentation from the conference program.

(1) Registration of the presenter's participation in IDW '21 and payment of registration fees must be completed by the due date stated in the notification e-mail of evaluation. Each presentation requires a registration fee.
(2) The authors must submit a Camera-Ready Manuscript and video file of their presentation by the respective deadlines.
(3) The maximum number of pages for the Camera-Ready Manuscript is four and at least two pages must be completed.
(4) All company or governmental permission must be obtained.
(5) The author must be the copyright holder or have written permission from the copyright holder for any material used in the paper. The use of trademarked items (company or product logos, images, and products name) is not permitted without permission. The copyrights of your Camera-Ready Manuscript will be transferred to ITE and SID. However, the copyrights of your recorded presentation will not be transferred.
(6) The Camera-Ready Manuscript submitted to the conference proceedings must not be published in any media, including personal websites before it is presented at the conference.

IDW SCOPE AND OUTLINES

IDW includes a variety of topics and aspects of display technologies, systems, processes and applications. IDW '21 will feature the following four special topics and one topical session, as well as 16 general topics. The special topics are these recent hot topics: AR/VR and Hyper Reality, Automotive Displays, Quantum Dot Technologies, and Micro/Mini LEDs. The topical session is organized for new technology topics: Artificial Intelligence and Smart Society. The IDW Scope includes a variety of topics of display materials and components, display devices, electronic systems, quality evaluation, interactive technologies, manufacturing processes and equipment, and applications listed below. We welcome the submission of original papers on all aspects of research, technical development, measurement systems, driving methods, data management and applications of information displays, and related technologies.

SPECIAL TOPICS OF INTEREST

AR/VR and Hyper Reality

Organizing Workshops: LCT, FMC, OLED, 3D, VHF, PRJ, DES and INP

This topic will cover all aspects of technologies related to display applications closest to the end-user such as virtual reality, augmented reality (mixture of VR and the real world), and hyper reality (hyper-realistic systems). Regarding recent development of VR devices, authors of all accepted papers are highly encouraged to present their demo in the Enhanced discussion.

Scopes
1) Hardware: sensors, circuits, and displays including light field camera, motion capture, holographic technology, and HMD/HUD
2) Software technique: image processing, computer vision, computer graphics, audio-visual processing, and human-computer interaction
3) Application: sensing analysis and AI, digital twin, systems for industry, mobility, medical, life, art and education
4) The human factor in AR, VR, and hyper-realistic systems

Automotive Displays

Organizing Workshops: LCT, 3D, VHF, PRJ, DES and INP

The significance of visual interface has been increasing in automobiles. This topic will cover all aspects of display technologies used in or outside of automobiles, including the following scopes.

Scopes
1) OLED/LCD display and projection-display technologies for car interior use
2) Head-up displays, augmented reality, and intelligent cockpit for automobiles
3) Image and information processing for automotive displays
4) Materials/components/device structures suited to automobiles
5) Adaptive headlight system, and projection type signals for other road users
6) Vision and human factors for automobiles and other transport systems

Micro/Mini LEDs

Organizing Workshops: LCT, AMD, FMC and MEET

Micro/Mini LEDs have recently attracted keen attentions in their applications to information displays.
This topic will cover all aspects and issues of technologies for flat-panel displays with Micro/Mini LEDs implemented densely.

Scopes
1) Materials, devices, opto-electrical designs and manufacture of discrete Micro/Mini LEDs
2) Materials, devices, opto-electrical designs and manufacture of Micro LEDs monolithically implemented onto panels
3) Emissive Micro/Mini LED displays
4) Passive-matrix displays (PMDs) with a discrete Micro/Mini LED on each pixel
5) Active-matrix displays (AMDs)
6) LCDs with Mini LED backlighting
7) Assembly implementation of Mini LEDs directly beneath LCD cells
8) Optical designs for diffuse propagation of backlight emitted from Mini LED
9) Driving methods for local dimming by backlighting Mini LED arrays
10) Novel applications of Micro/Mini LED-based displays

Quantum Dot Technologies

Organizing Workshops: FMC, PH, OLED and MEET

This topic will cover all aspects of science and technologies of Quantum Dot (QD) and Quantum Rod (QR), ranging from materials research, device structure and properties, to device applications, manufacturing and high color gamut displays using QD/QR.

Scopes
1) Materials and properties for display or lighting
2) Novel Device structure and properties (QDCF, QLED, etc.)
3) New Device applications (Lighting, BLU, Display, etc.)
4) Device manufacturing processes (Inkjet, Roll to Roll, Photolithography, etc.)
5) High color gamut technology using QD/QR

AWARDS

IDW Best Paper Award

IDW Outstanding Lightning Talk Award

The award committee of IDW will select the most outstanding paper and lightning talk from those presented at IDW '21. The awards shall be granted on the basis of the excellence of the paper, and the presentation and discussion of them. The winners will be announced on the IDW website and awarded a plaque.

TOPICAL SESSION

Artificial Intelligence and Smart Society

Recently, artificial intelligence becomes a common technology, and it will be a key concept of smart society in the future, which is called Industry 4.0 and Society 5.0, where the cloud and edge are excellently connected. In this scope, the relationship between information displays, artificial intelligence, and smart society will be discussed. Some respective researchers will be invited as invited speakers, and some contributions from researchers being interested in these topics are welcomed.

TOPICS OF IDW SCOPE

3D/Hyper-Realistic Displays

This topic will cover several current topics encompassing 3D/hyper-realistic displays, systems and other related technologies.

Topic Areas
1) Stereoscopic, autostereoscopic, holographic, volumetric, head-mounted and other 3D/hyper-realistic display systems
2) Immersive, interactive and VR display technologies
3) 3D/hyper-realistic image interaction systems for Augmented Reality (AR)
4) Image capturing and information detection systems such as Multiple cameras, light-field camera, depth camera, 3D scanner, and others for 3D/hyper-reality and interaction
5) Human brain sensing technologies and systems for hyper reality and interaction
6) Multi-spectral imaging
7) New output devices or systems for 3D/hyper-reality and interaction
8) Algorithms for image coding, 2D to 3D conversion, multi-viewpoint representation and other image processing for 3D/hyper-realistic display systems
9) Digital archive systems for cultural heritages, medical images and others using 3D/hyper-realistic image systems
10) Human factor and evaluation of 3D/hyper-realistic display techniques and systems
11) Pictorial cue

Active-Matrix Displays

This topic will cover all aspects of active matrix displays.

Topic Areas
1) Active-matrix displays technology related to liquid crystals, organic/inorganic light-emitting diodes, electrophoresis, electrochromism, field emission, micro-electro mechanical systems
2) Active devices including silicon-based TFTs, oxide TFTs, organic TFTs, silicon-based TFTs, CNT-FETs, transition metal dichalcogenide FETs, Dirac-cone based devices (graphene, silicene, BN, MoS_2, etc.) and solution-processed devices
3) Issues in high-resolution/large-area active matrix displays and devices including array and circuit design technologies, addressing schemes, systems, fundamentals, device physics, structures, processes, new materials, evaluation methods, reliability and mechanical testing
4) Novel emerging active-matrix displays and devices
5) Innovative applications of active-matrix devices including touch, imaging, sensing, flexible devices and micro, wearable, signage displays, etc.

Display Electronic Systems

This topic will cover general issues for display electronic systems.

Topic Areas
1) Driving methods, circuits, and systems
2) High quality color reproduction systems (high dynamic range and wide color gamut)
3) High-fidelity systems such as professional use and master monitors
4) Exploration of future standards such as post-HDTV
5) Video interface technologies including data transmission and storage
6) Novel display systems including mobile/auto applications
7) Cooperative operations of functional components
8) Video and image processing (coding, super-resolution, de-interlacing, scaling, elimination of artifacts and blur)
9) AI-related video and image processing (image recognition, autonomous driving, fake media)

e-Paper

This topic will cover all aspects of electronic paper ranging from materials science and devices to human factors and various applications for the future.

Topic Areas
1) Advancement of various display technologies for e-Paper to enhance colors, brightness and contrast ratio
2) Novel functional materials and components
3) Driving method
4) Human interfaces suitable for e-Paper from paper-like displays to tablet PCs
5) Various applications of e-Paper such as e-Books, e-Document, and IoT
6) Discussion of the social impact of e-Paper
7) Evaluation method taking account of human factors

Emissive Technologies

This topic will cover all aspects of science, technologies, and applications of phosphor, such as phosphor screens for electronic displays, lighting source, and other emissive devices, and will also deal with those for FEDs, ELDs and PDPs.

Topic Areas
1) Fundamental mechanisms and configurations
2) Modeling and simulation
3) Materials, components and fabrication processes
4) Field emission physics and characteristics
5) Inorganic ELDs (materials, process, devices, drive circuits, etc.)
6) LED (materials, devices, panels, lighting, etc.)
7) Phosphors for CRTs, PDPs, FEDs, VFDs and LEDs
8) Driving technologies and signal processing particularly embedded to emissive devices.
9) Picture quality, reliability and lifetime
10) Applications of CRTs, PDPs, FEDs and ELDs

Flexible Electronics

This topic will cover all aspects of flexible/stretchable electronics, including material science, device physics, fabrication processes, and application systems for next-generation technology.

Topic Areas
1) Novel flexible/stretchable devices in display and non-display fields
2) Flexible/stretchable mechanism and strategy
3) Flexible/stretchable substrate innovation (plastic film, metal foil, ultra-thin glass sheet, textile, paper, etc.) and encapsulation
4) High-performance flexible/stretchable display principles
5) Fabrication methods especially for flexible/stretchable devices (printing techniques, roll-to-roll process, transfer techniques, etc.)
6) Tolerance evaluation for bending and stretching deformation
7) Revolutionary device applications (bendable, foldable, stretchable, roll-up screen, hanging, wearable, wrapping usages, etc.)

Human Factor

This topic will cover all aspects of vision and human factors related to information displays, such as visual ergonomics and requirements, image quality, display measurements, as well as new display applications and ergonomics.

Topic Areas
1) Visual requirements for display performance: luminance, contrast, grayscale, color, resolution, frame rate, viewing angle, etc.
2) Display image format for better visual experience, such as UHD TV
3) Analysis and improvement of image quality on displays, such as HDR, high-quality color reproduction, wide gamut, or moving image artifacts
4) Evaluation of image quality, such as subjective evaluation of new displays, or quality-improvement methods
5) Display measurement methods relevant to human factors
6) Ergonomics of new display applications, such as AR/VR systems, automotive visual systems, 3D displays, LED backlights, etc.
7) Visual ergonomics, such as visual fatigue, eye strain, legibility/usability, or actions/behaviors related to visually displayed information
8) Physiological/psychophysical factors and biometrics
9) Sensory/perceptual/visual illusions

Interactive Technologies

Touch panel technology continues to evolve. Camera systems are often employed in auto-stereoscopic displays. Sensing and displaying 3D positions in space literally open a new dimension for a truly intuitive human interface. This topic covers all aspects of input technologies related to displays, ranging from materials, devices, application systems to discussions on how we interact with various systems.

Topic Areas
1) Out-cell, On-cell and In-cell touch panels
2) Touch panel materials, devices, production processes and systems
3) Image sensors
4) Adaptive and personalized interfaces
5) Input systems for augmented reality
6) Human-computer interaction and other emerging interactive technologies

Liquid Crystal Science and Technologies

This topic will cover all aspects of liquid crystal (LC) science and technologies, including LC material science, device technology, fabrication processes, evaluation method, and new technologies for display, photonics, and sensing applications.

Topic Areas
1) Physicochemical studies of LC materials
2) Nano-structural LC alignment and devices including blue phase
3) Surface alignment processes and characterization techniques
4) Electro-optic effects, display modes, optical design and simulations
5) Fabricating, manufacturing, measuring and evaluation techniques
6) High performance displays featuring excellent image quality including 8K-LCD technologies
7) Wide color gamut LCDs using QD or other new technologies
8) LC technologies for flexible displays, sunlight readable displays and low power electronic papers
9) Optical functional devices for non-display applications including LC lens, sensor, smart window and beam steering
10) LC semiconductors and organic electronics
11) LC photonic crystals and lasers
12) LC technologies for 3D / holographic displays

Manufacturing, Process and Equipment

This topic will cover technology trends and aspects of electronic displays from the perspective of manufacturing and printing fabrication processes.

Topic Areas
1) Fabrication methods of displays
2) Manufacturing process: photolithography, coating and printing technologies, soft lithography, roll-to-roll process, and transfer techniques for high precision and large area
3) Measurement and evaluation equipments

Materials and Components

Displays are sustained by a wide spectrum of advanced materials and components. In this topic, new materials and components for display systems, modifications and improvements of the existing systems are treated.

Topic Areas
1) Novel materials and components technologies in automotive, avionics, shipboard, transparent, signage, simulator, and other display systems
2) Technology trends in panel structure and display systems
3) Optical components, devices or systems, and color filter technologies
4) LED/micro-LED/OLED/emissive source materials: quantum-dot, electro-optic devices and materials
5) Display lighting materials/components and fabrications, including light directing films
6) New developments in backlight unit (BLU), frontlight unit (FLU) and lighting fixtures components
7) Innovative technologies on material and component for 3D (stereoscopic, volumetric, holographic, light field) displays, AR/VR, flexible electronics, ultra-high resolution, EPD, MEMS/MEOMS, sensing, and interaction

MEMS

This topic will cover all aspects of science and technologies of MEMS for future displays, imaging devices, and related electron devices, ranging from materials research and basic device physics to display and other applications.

Topic Areas
1) Displays, imaging devices and other optical and electron devices using MEMS
2) Optical MEMS such as optical scanners, optical switches, optical mirrors, optical space modulators, optical filters, etc.
3) Sensors and actuators
4) Materials, components and fabrication processes
5) Fundamental mechanisms and configurations

OLED Displays and Organic Devices

This topic will cover all aspects of science and technologies of OLED, ranging from materials research and basic device physics to display including backplane technologies and other applications.

Topic Areas
1) Materials for organic devices (OLED, OTFT, OLET, QLED)
2) Device physics and related phenomena of organic devices
3) Backplane technologies for OLED applications
4) Fabrication processes for organic devices
5) Miscellaneous topics related with organic devices
6) Fundamental mechanisms and configurations of organic devices
7) OTFT for OLED displays
8) Organic light-emitting transistors (OLET)
9) Quantum-dot light-emitting devices (QLED)
10) OLED for lightings
11) Flexible organic materials and devices for OLED

Projection and Large Area Displays

This topic will cover all aspects of science, technologies and applications of projection, large area displays and the components.

Topic Areas
1) Projectors (conventional, pico, embedded, laser scanning, projection TV)
2) Intelligent display (wearable, near-eye, AR&VR, applications)
3) Microdisplay (LCOS, MEMS, HTPS) technologies for projection
4) Optics and optical components (light sources, screens, lenses, mirrors, films, etc.) for projection
5) Algorithms for image processing and artifact mitigation for projection and sensing.
6) Applications such as digital cinema, 3-D projection, 3-D measurement, signage, interior illumination, medical health care, and vehicle display systems including head-up display, intelligent cockpit, and adaptive headlight
7) Large-area displays, tiled-displays, and projection mapping systems
8) Sensing applications (ToF, LIDAR, Machine Vision, smart city, AI, etc.) in projection technology

Oxide-Semiconductor TFT

Recently, research and development on metal-oxide semiconductors have been carried out worldwide. Currently, a-IGZO TFTs have already been mass produced for use in AM-LCDs and AM-OLEDs. This special topic will cover all aspects of science and technologies for oxide-semiconductor TFTs including hybrid circuits with other semiconductor TFTs.

Topic Areas
1) Materials, device physics, illumination instability, degradation, fabrication processes, and production equipment
2) Display backplanes for LCD, OLED, QLED, perovskite-related LED, micro/mini LED, electrochromic, electrophoretic displays and e-Paper, circuits, and embedded systems
3) Flexible devices, transparent electronics, sensors, and other applications

User Experience and Cognitive Engineering

This topic will cover all aspects of social studies, cognitive science, and human-computer interaction that aim to open new use scenarios of displays.

Topic Areas
1) Ethnography and social studies
2) Survey and analysis of user needs
3) Cognitive experiments and design of displays
4) Novel interaction techniques and interactive applications
5) Computer-supported cooperative work (CSCW) using displays
6) Digital reading applications and educational software
7) Entertainment computing and media art

INVITED TALKS

- **Ferroelectric Liquid Crystal Electro-Optics**
  Noel Clark (Univ. of Colorado)
- **Advent, Evolution, and Recent Advances in FFS TFT-LCDs**
  Seung Hee Lee (Chonbuk National Univ.)
- **Polar Liquid Crystals for Highly Ordered Nematics**
  Atsutaka Manabe (Merck KGaA)
- **Scanning Backlight System For High Frame Rate LCD with IGZO-TFT Technology**
  Masamitsu Kobayashi (Sharp Display Tech.)
- **A Personal View on Decades of Impact of Surface Studies in Liquid Crystal Display Engineering**
  Hiroshi Yokoyama (Kent State Univ.)
- **Polymorphic Structures and Characteristics of Polar Nematics**
  Hiroya Nishikawa (AIST)
- **Liquid Crystal Reorientation between Strong and Weak Surface Anchoring: Application to Ultra-Low Driving Voltage Devices**
  Rumiko Yamaguchi (Akita Univ.)
- **Development of the LCOS Scanner for Low Cost LiDAR with Built-in Calibrator**
  Tetsuharu Miwa (JNC Petrochemical)
- **Ultra-flexible Organic Light-emitting Diode for Optogenetic Application**
  Tomoyuki Yokota (The Univ. of Tokyo)
- **Design of Multi-resonance Thermally Activated Delayed Fluorescence Materials for Organic Light-emitting Diode**
  Eli Zysman-Colman (Univ. of St Andrews)
- **17-in×17-in Flexible Flat Panel X-ray Detectors with High Image Quality and Light Weight**
  Shinichi Ushikura (Fujifilm)
- **Operation Mechanism and Efficiency-limiting factors in QLED**
  Hiroyoshi Naito (Osaka Pref. Univ.)
- **Spatial Reality Enhancement using Eye-sensing Light Field Display**
  Yuji Nakahata (Sony Group)
- **Is Projection Mapping Natural? A Physical-World Augmentation Approach Consistent with Light Field Context**
  Daisuke Iwai (Osaka Univ.)
- **Holographic Contact Lens Display**
  Yasuhiro Takaki (Tokyo Univ. of A&T)
- **Displaying Tactile Sensation Using SMA Actuators and Sensors**
  Hideyuki Sawada (Waseda Univ.)
- **Recent Developments and Applications of Aerial Imaging Device**
  Makoto Otsubo (Asukanet)

The titles are tentative. Additional invited talks are being arranged. For the latest list of invited talks, please visit our website.

OVERSEAS ADVISORS

Brian H. Berkeley	(Highlight Display, USA)	Hoi-Sing Kwok	(Hong Kong Univ. of S&T, Hong Kong)
Achin Bhowmik	(Starkey Hearing Techs. / Stanford Univ., USA)	Kei May Lau	(Hong Kong Univ. of S&T, Hong Kong)
Janglin Chen	(ITRI, Taiwan)	Kalluri R. Sarma	(Display Tech. Consulting, USA)
Steven P. DenBaars	(Univ. of California, USA)	Helge Seetzen	(TandemLaunch, Canada)
Norbert Fruehauf	(Univ. of Stuttgart, Germany)	Baoping Wang	(Southeast Univ., China)
Jin Jang	(Kyung Hee Univ., Korea)	Larry F. Weber	(Consultant, USA)
Yong-Seog Kim	(Hongik Univ., Korea)	Bo-Ru Yang	(Sun Yat-Sen Univ., China)

WORKSHOPS AND CHAIRS

All of the IDW topics will be organized by following workshops and Topical Sessions.

LCT	LC Science and Technologies	: Koichi Miyachi (JSR)
AMD	Active Matrix Displays	: Toshiaki Arai (JOLED)
FMC	FPD Manufacturing, Materials and Components	: Hirotsugu Yamamoto (Utsunomiya Univ.)
PH	Inorganic Emissive Display and Phosphors	: Yoichiro Nakanishi (Shizuoka Univ.)
OLED	OLED Displays and Related Technologies	: Kengo Kishino (Idemitsu Kosan)
3D	3D/Hyper-Realistic Displays and Systems	: Masaru Tsuchida (NTT)
VHF	Applied Vision and Human Factors	: Yoshie Imai (Mitsubishi Elec.)
PRJ	Projection and Large-Area Displays and Their Components	: Satoshi Ouchi (Hitachi)
EP	Electronic Paper	: Keisuke Hashimoto (E Ink Holdings)
MEET	MEMS and Emerging Technologies for Future Displays and Devices	: Masayuki Nakamoto (Shizuoka Univ.)
DES	Display Electronic Systems	: Haruhiko Okumura (Toshiba)
FLX	Flexible Electronics	: Yukiharu Uraoka (NAIST)
INP	Touch Panels and Input Technologies	: Nobuyuki Hashimoto (Japan Women's Univ.)
AIS	Artificial Intelligence and Smart Society	: Mutsumi Kimura (Ryukoku Univ.)

SPECIAL TOPICS OF INTEREST AND FACILITATORS

AR/VR	AR/VR and Hyper Reality	: Satoshi Ouchi (Hitachi)
AUTO	Automotive Displays	: Kazumoto Morita (Chuo Univ.)
mLED	Micro/Mini LEDs	: Yasufumi Fujiwara (Osaka Univ.)
QDT	Quantum Dot Technologies	: Toshiaki Ikuta (JNC Korea)

CHAIRS

General Chair	Executive Chair	Program Chair
Hideo Fujikake (Tohoku Univ.)	Osamu Akimoto (Sony Semiconductor Solutions)	Tomokazu Shiga (Univ. of Electro-Commun.)
general-chair21@idw.or.jp	executive-chair21@idw.or.jp	program-chair21@idw.or.jp

SPONSORING SOCIETIES

The Institute of Image Information and Television Engineers
The Society for Information Display

Kobayashi-Uchiike-Mikoshiba Prize

Kobayashi-Uchiike-Mikoshiba Prize shall be conferred by the International Display Workshops (IDW) General Incorporated Association Board of Directors upon a person with both an outstanding record of accomplishments in any of the IDW fields of interest and an outstanding contribution to the IDW. The accomplishments that are being honored shall have contributed importantly to the advancement or application of engineering, science and technology, bringing the realization of significant value to society. Further details will be announced on the following page.

https://rijikai.idw.or.jp/?page_id=576

IDW '21

The 28th International Display Workshops
December 1-3, 2021
Virtual Conference

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