



IDW '11 - The 18th International Display Workshops

December 7-9, 2011

Nagoya Congress Center, Nagoya, Japan

Sponsored by

The Institute of Image Information and Television Engineers

The Society for Information Display

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

IDW '11 FEATURES

IDW '11 will integrate fifteen workshops and two topical sessions in specialized fields playing important roles in information display activities. Each workshop will consist of oral presentations by invited/contributed speakers and poster presentations. Detailed and fruitful discussions on each specialized R&D update will be provided. The workshops and the topical sessions should be of interest not only to researchers and engineers, but also to those who manage companies and institutions in the display community.

CONFERENCE SITE

The city of Nagoya is located in the center of Honshu, the main island of Japan, and Central Japan International Airport (Centrair) is the gateway of Central Japan to the sky, and has about 30 international routes from Asia, Europe and America, and 24 domestic routes. Also the transportation system between Centrair and Nagoya is excellent, which takes 28 minutes by train or 30-40 minutes by car. Nagoya has good access to Tokyo, Kyoto, Osaka and all other areas in Japan.

In Nagoya, traditional industries like ceramics and textiles, and today's key industries like automobiles, aviation and machine tools have developed, and Nagoya plays an important role in Japan's industrial society.

Today, Nagoya grabs attention and continues to develop as a Japanese international city.

The Nagoya Congress Center is located about 6 km from Nagoya station, and is accessible from Nagoya station by about 20 minutes by subway and a further 5 minutes on foot. This convention center, with a design motif of a swan poised for flight, consists of four buildings. The various types of conference rooms make this center a suitable for IDW '11.

Please see the following websites for more information.

<http://www.ncvb.or.jp/en/contents/>

<http://www.nagoya-congress-center.jp/english/index.html>

DEADLINES AND KEY DATES

Submission of Technical Summary ----- June 24, 2011

Acceptance Notification/Author's Kit available on the website

----- July 21, 2011

Submission of Camera-Ready Manuscript & Abstract

-----September 8, 2011

Submission of Late-News Paper ----- September 23, 2011

Early Bird Registration Discount ----- November 4, 2011

LANGUAGE

The official language is English.

The latest information is available on <http://www.idw.ne.jp/>

IDW '11 CHAIRS

General Chair
N. Ibaraki (AIST)
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Executive Chair
T. Komaki (Panasonic)
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Program Chair
M. Kimura (Ryukoku Univ.)
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The Advance Program will be available in September 2011, including REGISTRATION and HOTEL INFORMATION.

Keynote Addresses

• *Technological Strategy for Picture Quality of Future Displays*

Takashi Kamitake (Toshiba)

• *Present Status and Future Trend of Information Displays*

Kwang Yeol Choi (LG Elect.)

The titles are tentative.

Invited Addresses

• *Oxide Electronics*

John F. Wager (Oregon State Univ.)

• *Graphene in Electronics: Current Status and Future Outlook*

Maki Suemitsu (Tohoku Univ.)

The titles are tentative.

Topical Sessions

"Lighting Technologies"

"Automotive Displays"

Paper submissions from various fields are expected.

EXHIBITION

The IDW '11 Exhibition covers materials, components, manufacturing and measuring equipment, software systems and other related products for display devices.

To make an exhibition, please contact the IDW '11 Secretariat.

WORKSHOP OUTLINES

LCT

Workshop on LC Science and Technologies

Workshop Chair: H. Okada (Univ. of Toyama)

This workshop will cover all aspects of liquid crystal (LC) science and technologies, ranging from fundamental material research to display and other applications. An in-depth discussion on advanced LC displays and novel LC functionality will be especially emphasized.

Topic Areas

- 1) Physicochemical and thermal 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
- 7) LC technologies for flexible displays and electronic papers
- 8) Optical functional devices for non-display applications
- 9) LC semiconductors and organic electronics
- 10) LC photonic crystals and lasers

AMD

Workshop on Active Matrix Displays

Workshop Chair: K. Azuma (Shimadzu)

This workshop will cover all aspects of active matrix displays.

Topic Areas

- 1) Fundamentals, structures, processes, new materials
- 2) Array & circuit design technologies, addressing schemes, systems
- 3) Evaluation methods, reliability, mechanical testing
- 4) Active devices:
 - a-Si TFTs, poly-Si TFTs, μ c-Si TFTs, oxide TFTs, organic TFTs, active devices based on nanotechnology
- 5) Active-matrix displays:
 - LCDs, OLEDs, e-papers, FEDs, micro-displays, flexible active-matrix displays
- 6) Touch & other sensors built into cells
- 7) Digital signage and other novel applications

FMC

Workshop on FPD Manufacturing, Materials and Components

Workshop Chair: R. Yamaguchi (Akita Univ.)

This workshop will cover technology trends and flat panel displays (FPDs) from the perspective of manufacturing, materials, components and systems.

Topic Areas

- 1) Trends in FPD materials, components and systems
- 2) Technical trends in panel construction
- 3) Optical materials and systems
- 4) Color filter materials
- 5) Lighting materials, components and systems
- 6) Materials for processes
- 7) Equipment for processes and measurements
- 8) Green Factory, 3R (Recycle, Reduce and Reuse)

PDP

Workshop on Plasma Displays

Workshop Chair: H. Kajiyama (Hiroshima Univ.)

This workshop will cover all aspects of science, technologies and applications of plasma display panels.

Topic Areas

- 1) Fundamental mechanisms
- 2) Panel configurations
- 3) Materials, components and fabrication processes
- 4) Driving techniques, signal processing and image quality

For high efficacy, high γ , high exo-emission, high speed driving, high definition over 4k x 2k, high performance, etc.

PH

Workshop on EL Displays and Phosphors

Workshop Chair: Y. Nakanishi (Shizuoka Univ.)

This workshop will include a discussion on current topics in EL displays (ELDs), LEDs and phosphors, and will also deal with phosphor application, phosphor screens for CRTs, plasma displays (PDPs), field emission displays (FEDs) and other emissive displays.

Topic Areas

- 1) Inorganic ELDs (materials, process, devices, drive circuits, etc.)
- 2) LEDs (materials, devices, panels, lighting, etc.)
- 3) Phosphors (for CRTs, PDPs, FEDs, VFDs, LEDs, etc.)

FED

Workshop on Field Emission Display and CRT

Workshop Chair: M. Takai (Osaka Univ.)

The following topics will be covered in this workshop.

Topic Areas

- 1) Fundamental mechanisms and configurations
- 2) Modeling and simulation
- 3) Materials, components and fabrication processes
- 4) Field emission physics and characteristics
- 5) Driving technologies and signal processing
- 6) Picture quality, reliability and lifetime
- 7) Applications
- 8) Miscellaneous topics related with field emitters
- 9) Entire field of CRT

OLED**Workshop on OLED Displays and Related Technologies***Workshop Chair: S. Naka (Univ. of Toyama)*

This workshop 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)
- 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) OLED for lightings
- 10) Flexible organic devices

3D**Workshop on 3D/Hyper-Realistic Displays and Systems***Workshop Chair: S. Yano (NICT)*

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

Topic Areas

- 1) Stereoscopic, holographic and other 3D display technologies and systems
- 2) Immersive, interactive and VR display technologies and systems
- 3) New applications using 3D/hyper-realistic displays
- 4) 3D image coding, 2D to 3D conversion, multi-viewpoint representation and other 3D/hyper-realistic image processing
- 5) Human factor and evaluation of 3D/hyper-realistic display techniques and systems

VHF**Workshop on Applied Vision and Human Factors***Workshop Chair: T. Kurita (NICT)*

This workshop will cover all aspects of vision, human factors and image quality related to information displays, such as visual requirements, image quality analysis/improvements, or measurements on displays, as well as new applications of display systems and their ergonomics.

Topic Areas

- 1) Image quality: analytic models, evaluation methods and metrics
- 2) Visual requirements for display characteristics: luminance, contrast, gray-scale, color, resolution, frame rate, viewing angle, etc.
- 3) Analysis and improvement of display image quality on various factors, such as dynamic range or spatio-temporal image artifacts
- 4) Display measurement methods relevant to human factors
- 5) Display ergonomics and their standards
- 6) Legibility and usability issues for text displays or electronic papers
- 7) Actions and behaviors related to visually displayed information

PRJ**Workshop on Projection and Large-Area Displays and Their Components***Workshop Chair: K. Takeda (SEIKO EPSON)*

This workshop will cover current topics concerning projection and large-area displays and their components.

Topic Areas

- 1) Projectors, pico-projectors, embedded projectors, near-eye displays, head-up displays and projection TVs
- 2) Micro display and MEMS technologies for projection
- 3) Optics and video signal processing for projection
- 4) Optical components (light sources, screens, lenses, mirrors, films, etc.) for projection
- 5) Algorithm and image processing for large screen displays
- 6) Digital cinema, 3-D projection and signage systems
- 7) Large-area display systems and tiled-display systems

EP**Workshop on Electronic Paper***Workshop Chair: M. Omodani (Tokai Univ.)*

This workshop will cover all aspects of electronic paper, rewritable paper, and paper-like display.

Topic Areas

- 1) Display methods for e-Paper: mainly reflective technologies
- 2) Materials, components and fabrication processes
- 3) Driving circuits and techniques
- 4) e-Paper human interfaces
- 5) e-Books, e-Newspapers and various other applications of e-Paper
- 6) Discussion of the social impact of e-Paper

“Short Presentation Session” for poster presenters to be newly introduced as part of EP workshop!

All poster presenters are strongly encouraged to give a brief oral presentation of 5 minutes with no discussion time.

MEET**Workshop on MEMS and Emerging Technologies for Future Displays and Devices***Workshop Chair: M. Nakamoto (Shizuoka Univ.)*

This workshop will cover all aspects of science and technologies of MEMS, nanotechnologies and emerging technologies 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, nanotechnologies and emerging technologies
- 2) Optical MEMS such as optical scanners, optical switches, optical mirrors, optical space modulators, optical filters, etc.
- 3) Sensors and actuators for electromagnetic wave, infrared rays, ultraviolet rays, X-rays, visible rays, supersonic wave, hearing, touch, smell, taste, etc.
- 4) Materials, components and fabrication processes
- 5) Fundamental mechanisms and configurations
- 6) Miscellaneous topics related to future displays

DES

Workshop on Display Electronic Systems

Workshop Chair: H. Okumura (Toshiba)

This workshop will cover all aspects of electronic systems including hardware as well as software on all kinds of displays.

Topic Areas

- 1) Video processing including deinterlace, scaling and elimination of artifacts and blur
- 2) High quality color reproduction including 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) Circuit technologies including high speed and low power driving

FLX

Workshop on Flexible Displays

Workshop Chair: H. Fujikake (NHK)

This workshop will cover all aspects of flexible displays, including material science, device technology, fabrication processes, and application systems for next-generation displays.

Topic Areas

- 1) Flexible/stretchable material and device strategy
- 2) Fabrication technologies, including printing techniques, soft lithography, roll-to-roll process and transfer method
- 3) Flexible substrate (plastic film, metal foil, ultra-thin glass, textile, etc.) and encapsulation
- 4) TFT technology in flexible inorganic and organic electronics
- 5) Display principles (OLED, LC, electronic paper, etc.) suitable for various applications
- 6) Flexibility, bending tolerance and techniques to evaluate them
- 7) Innovative applications (paper-like, foldable, roll-up screen, wearable, wrapping usages, etc.)
- 8) Human interface for ubiquitous/ambient information technologies

INP

Workshop on Touch Panels and Input Technologies

Workshop Chair: I. Fujieda (Ritsumeikan Univ.)

Touch panel technology continues to evolve. Camera systems are often employed in auto-stereoscopic displays. Sensing and displaying three-dimensional positions literally open a new dimension for a truly intuitive human interface. This workshop covers all aspects of input technologies related to displays, ranging from material research and theoretical analysis to application systems.

Topic Areas

- 1) Touch panel materials, devices and systems
- 2) Image sensors
- 3) 2D, 3D imaging devices and systems
- 4) In- and on-cell touch panels
- 5) Input image signal processing

LIT

Topical Session on Lighting Technologies

Topical Session Chair: Y. Kijima (Sony)

This topical session will cover all aspects of science and technologies of Lightings, ranging from LED lighting, OLED lighting, Flexible lighting, manufacturing of Lightings materials, device structures for Lightings and internal or external efficiency enhancement technologies.

Topic Areas

- 1) Solid-State Lighting: LED and OLED
- 2) Fluorescent Light Sources: CCFL and HCFL
- 3) Flexible Lighting including Backlight Unit for LCD
- 4) Manufacturing of Lightings and their applications
- 5) Materials and device structures for Lightings
- 6) Technologies about the internal or external efficiency enhancement
- 7) Theories, Simulations and Measurements for Lightings
- 8) Energy Consumption and Environmental Issues
- 9) Miscellaneous topics related with Lightings

AUTO

Topical Session on Automotive Displays

Topical Session Chair: S. Okabayashi (Meijo Univ.)

The evolution of automobiles in recent times has heavily relied on the introduction of highly complicated electronic systems and computerization. The significance of visual interface has been increasing in such systems. In this topical session, we hope to cover all topics related to in-vehicle as well as external displays.

Topic Areas

- 1) Novel visual interface and in-vehicle and external display applications
- 2) Displays as a human interface with intelligent transportation systems
- 3) Vision and human factors specific to automobiles
- 4) Image and information processing for automotive displays
- 5) Specific display electronics appropriate for automobiles
- 6) Materials and device structures suited to automobiles

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 '11. The winners will be announced on the IDW website and given a plaque after the conference. We encourage that young researchers win the awards.

PAPER SUBMISSION

INSTRUCTIONS FOR SUBMISSION OF TECHNICAL SUMMARY

Submit a Technical Summary in PDF or Microsoft Word format without any protection via the conference website:

<http://www.idw.ne.jp/authinfo.html>

Follow the submission instructions given on the website and shown below. The Technical Summary will be used only for evaluation and will not be published. The title of the accepted papers, the authors and their affiliations will be published in the Advance Program.

I. Technical Summary Guidelines

The file should be formatted to A4 page size. Details of the format are described in the sample file available on the website (<http://www.idw.ne.jp/authinfo.html>).

Files should contain one or two pages of text in **one column**, with additional pages for figures/tables/photographs. The following items should be included:

- (1) **Paper title**
- (2) **Names of all authors with their affiliations.** The name of the presenting author should be underlined.
- (3) **Abstract:** 50 words or less, highlighting the focus of your paper.
- (4) **Presentation style:** Indicate if you wish to have your paper considered for oral or poster presentation.
- (5) **Workshop/Topical session preference:** Indicate the closest matching workshop/topical session.
- (6) **The body** of the Technical Summary must contain the following.
 - (a) Background and objectives: Introduce the state of the subject and describe the goal of your work.
 - (b) Results: Describe specific results. Illustrations to highlight your work are encouraged.
 - (c) Originality: Clearly describe what are new and/or emphasized points.
 - (d) Impact: Discuss the significance of your work and compare your findings with previously published works.
 - (e) References: List references covering projects in related areas.
 - (f) Prior publications: The paper must be an original contribution. If you have published or presented material for similar work, explain how the present material differs.

II. Online Submission

Access <http://www.idw.ne.jp/authinfo.html>

The submission procedure consists of three steps:

- (1) **Questions to authors:** Select the number of authors, affiliations, and maximum number of affiliations for one author.
- (2) **Paper title & author information:** Input the paper title, the names of all authors, all affiliations, information about the presenting author, the WS/TS name, and presentation preference. Please understand that the title may be edited by the program committee.
An acceptance/reject notification will be sent to you via the e-mail address that you provided on the website.
- (3) **Confirmation & submission:** Please take time to review the paper title and the author information carefully as mistakes cannot be rectified after the file is uploaded. Select a file name of the Technical Summary to submit to our server. When the file is successfully uploaded, a "FINISH" message will appear on the screen and you will also receive a submission confirmation e-mail.

FORMAT OF PRESENTATION

- (1) **Oral presentations**
 - Oral presentations will conform to the 15-20 minute format including questions and answers. The program committee will determine the duration of presentation.
 - Oral presenters are strongly urged to attend the Author Interviews and Demonstrations after the presentation (AC 100 V power will be made available).
- (2) **Poster presentations**
 - Poster presentation will conform to a 2.5-3 hour format in front of an individual bullet board.
 - A desk and AC 100 V power will be made available.
- (3) Accepted papers will be assigned to either oral or poster presentation at the discretion of the program committee.

ACCEPTANCE

You will be notified of the results of your Technical Summary review via e-mail. Upon acceptance of the Technical Summary, authors must prepare a camera-ready manuscript to be published in the conference proceedings. The author should use the manuscript template, which will soon be available on the conference website. It will be four pages in length and in a two column format. Acceptance is subject to following conditions:

- (1) Registration is required before the camera-ready submission for all presenters.
- (2) All company or government releases must be obtained.
- (3) The author must be the copyright holder or have written permission from the copyright holder for any material used in the paper.
- (4) Your submitted paper must not be published in any media including personal websites on the Internet before it is presented at the conference.
- (5) A camera-ready manuscript must be submitted with a copyright transfer form which is available on the conference website (<http://www.idw.ne.jp/copyright.pdf>).
- (6) One of the authors must give a presentation at the conference. For the poster session, at least one of the authors must stand by their posters during their core time, which will be set in the session.

LATE-NEWS PAPERS

A limited number of late-news papers reflecting important new findings or developments may be accepted. Authors are requested to submit a 2-page camera-ready manuscript on A4-sized pages accompanied by an abstract, copyright transfer form and publication authorization. Access the conference website: <http://www.idw.ne.jp/authinfo.html>
Follow the submission instructions given on the website.

TRAVEL GRANTS

A limited number of travel grants will be available to full-time student presenters attending from outside Japan. Check the travel grant application box of the online submission mentioned above.

MAILING

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If you have any difficulties with online submission, please contact the IDW '11 Secretariat.

Invited Talks

- **200-in. Glasses-free 3D Display Using Projector Array**
Masahiro Kawakita (NICT)
- **Smart Laser Display**
Kazuhiya Yamamoto (Osaka Univ.)
- **Free Viewpoint TV (FTV) for 3D Space Transmission**
Masayuki Tanimoto (Nagoya Univ.)
- **Proposal for a Scanning Method Based on Complementary Field Offset Sampling and Its Application to Super Hi-Vision Projector**
Fumio Okano (NHK/NHK-ES)
- **Electrofluidic Displays and the Future of e-Paper Technology**
Jason Heikenfeld (Univ. of Cincinnati)
- **Trends in the International Commission on Illumination (CIE) and the International Colour Association (AIC)**
Miyoshi Ayama (Utsunomiya Univ.)
- **Efficient White PIN OLED Structures with Internal and External Light Outcoupling Enhancement**
Jan Birnstock (Novaled)
- **An Introductory Talk to Colorimetry**
Noboru Ohta (Rochester Inst. of Tech.)
- **Development of Oxide TFT and Application to the Transparent Display**
Sang-Hee Ko Park (ETRI)
- **Printing Technologies for Organic TFT Array**
Ryohei Matsubara (Toppan Printing)
- **Novel LCD Display with a Sensible Backlight**
Kwonju Yi (Samsung Elect.)
- **Displays as Advanced Human-Machine Interface**
Yoshio Nakatani (Ritsumeikan Univ.)
- **Full Color and Flexible Electronic Paper Display**
Masayuki Nishii (Bridgestone)
- **Advanced Flexible and EPD Technology**
Yong-In Park (LG Display)

The titles are tentative.
Additional invited talks are being arranged.

IDW '11 OVERSEAS ADVISORS

Munisamy Anandan	(SID, USA)	Anthony Lowe	(Lambent Consultancy, UK)
Jeremy H. Burroughes	(Cambridge Display Tech., UK)	Fan-Chen Luo	(AU Optronics, Taiwan)
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IDW '11



SOCIETY FOR INFORMATION DISPLAY

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