



IDW/AD '12 - The 19th International Display Workshops in conjunction with Asia Display 2012

December 4-7, 2012 Kyoto International Conference Center, Kyoto, Japan **Sponsored by** The Institute of Image Information and Television Engineers The Society for Information Display

IDW/AD '12 FEATURES

IDW/AD '12 will integrate fifteen workshops 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. Three topics, oxide TFT, augmented reality and lighting technologies are specially highlighted this year. The workshops 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

Kyoto is a city in the central part of the Honshu island. Over twelve hundred years have passed since the Imperial Palace was built in Kyoto in A.D. 794 and the city became the capital of Japan. While featuring a total of 17 UNESCO World Cultural Heritage Sites, Kyoto is also home to more than 2,000 shrines, temples and other historical sites.

Kyoto International Conference Center was established in 1966, as Japan's first state-sponsored international conference center. Please see the following websites for more information.

http://www.icckyoto.or.jp/en/index.html

Access:

About 75 minutes by Airport Shuttle Train "Haruka" from Kansai International Airport to Kyoto Station.

2 hours 15 minutes by Shinkansen (Bullet Train) from Tokyo Station to Kyoto Station.

The Subway is the easiest method of transportation to reach the Kyoto International Conference Center, located at the north end of the Karasuma line. It takes 20 minutes from Kyoto Station.

DEADLINES AND KEY DATES

Submission of Technical Summary------ June 22, 2012 Acceptance Notification/Author's Kit available on the website -----July 19, 2012 Submission of Camera-Ready Manuscript & Abstract ----- September 6, 2012 Submission of Late-News Paper ----- September 28, 2012 Early Bird Registration Discount ----- November 2, 2012

LANGUAGE

The official language is English.

- Keynote Addresses

- · Defy Gravity: The Art of Tangible Bits Hiroshi Ishii (MIT Media Lab)
- A Crystal Ball View of Smart TV for 2013 and Beyond Norio Murakami

(Former VP of Google and Former President of Google Japan)

- · How e-Paper and Tablets are Going to Change Books, **Newspapers and Documents** (WAN-IFRA) Stig Nordqvist
- Steps Toward a Giant Leap in Mixed and Augmented Reality Hidevuki Tamura

(Ritsumeikan Univ.)

The titles are tentative.

- Special Topics of Interest –

- Oxide TFT
- Augmented Reality
- Lighting Technologies

Paper submissions are eagerly recommended to these special topics.

EXHIBITION

The IDW/AD '12 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/AD '12 Secretariat.

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

IDW/AD '12 CHAIRS

General Chair Nobuki Ibaraki (AIST) general-chair12@idw.ne.jp

Executive Chair Haruhiko Okumura (Toshiba) executive-chair12@idw.ne.jp

Program Chair Makoto Omodani (Tokai Univ.) program-chair12@idw.ne.jp

The Advance Program will be available in September 2012, including REGISTRATION and HOTEL INFORMATION.

SPECIAL TOPICS OF INTEREST

Oxide TFT

Organizer Workshops: AMD, FMC, OLED, EP and FLX Facilitator: Kenichi Takatori (NLT Techs.)

Following the epoch-making paper presented by Prof. Hosono's team, research on amorphous In-Ga-Zn-O (a-IGZO) has been carried out worldwide. Research for other materials and polycrystalline oxide semiconductor TFTs has also been activated. This year, several companies are ready to use the a-IGZO TFTs for the mass production of AM-LCD and AM-OLED, after a long incubation period from the first report on a ZnO TFT in 1968. This special topic will cover all aspects of oxide-semiconductor-TFT-related science and technologies.

- 1) Oxide semiconductor materials and fundamental mechanisms
- 2) Device physics, fabrication processes and equipments
- 3) Oxide-TFT display circuits and embedded systems

Augmented Reality (AR)

Organizer Workshops: 3D, VHF, DES and INP Facilitator: Munekazu Date (NTT COMWARE)

Organizer Workshops: FMC, PH, OLED and PRJ

Facilitator: Yasunori Kijima (Sony)

This topic will cover all aspects of technologies, systems, applications and human factors for information display using a fusion of real and virtual.

Scopes

- 1) Augmented reality (AR) and mixed reality (MR) technologies
- 2) Projection mapping
- 3) Displays for AR and MR (HMD etc.)

Lighting Technologies (LIT)

This topic will cover all aspects of science and technologies of Lightings, ranging from LED lighting, OLED lighting, Flexible lighting, manufacturing

of Lightings, materials and device structures for Lightings and internal or external efficiency enhancement technologies. Scopes

- Solid-State Lighting: LED and OLED 1)
- 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
- Theories, Simulations and Measurements for Lightings 7)
- 8) Energy Consumption and Environmental Issues

4) Issues: illumination instability, degradation, etc.

4) Input and interactive technologies for AR and MR

5) Image processing for AR and MR

5) Oxide-TFT backplane for LCD, OLED display, e-Paper

6) Flexible devices, transparent electronics and other applications

9) Miscellaneous topics related with Lightings

WORKSHOP OUTLINES

LCT LC Science and Technologies

Workshop Chair: Hiroyuki 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 functionalities of LC materials will be especially emphasized.

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 including 3D technologies
- 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

Active Matrix Displays

Workshop Chair: Kazufumi Azuma (Shimadzu) This workshop will cover all aspects of active matrix displays.

Topic Areas

AMD

- 1) Active-matrix displays:
 - LCDs, OLEDs, e-papers, FEDs, micro-displays, flexible active-matrix displays
- 2) Fundamentals, structures, processes, new materials
- 3) Array & circuit design technologies, addressing schemes, systems
- 4) Evaluation methods, reliability, mechanical testing
- 5) Active devices:
 - oxide TFTs, organic TFTs, silicon-related TFTs,
 - CNT, graphene-based devices and other active devices, devices with solution process
- 6) Touch & other sensors
- 7) Digital signage and other novel applications

Materials and Components

Workshop Chair: Tetsuya Miyashita (Tohoku Inst. of Tech.)

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
- Equipment for processes and measurements 7)
- 8) Green Factory, 3R (Recycle, Reduce and Reuse)

PDP

Plasma Displays

Workshop Chair: Hiroshi Kajiyama (Tokushima Bunri 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.
- 5) Application for PDPs

FPD Manufacturing,

FMC

PH **EL Displays and Phosphors**

Workshop Chair: Yoichiro 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), lighting source and other emissive devices.

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.)

3D/Hyper-Realistic Displays 3D and Systems

Workshop Chair: Sumio Yano (Shimane Univ.)

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

Topic Areas

- 1) Stereoscopic, autostereoscopic, holographic and other 3D display technologies and systems
- 2) Immersive, interactive and VR display technologies and systems
- 3) 3D/hyper-realistic display technologies and systems for Augmented Reality(AR)
- 4) Digital archive systems using 3D/hyper-realistic displays
- 5) New applications using 3D/hyper-realistic displays 6) 3D image coding, 2D to 3D conversion, multi-viewpoint
- representation and other 3D/hyper-realistic image processing 7) Human factor and evaluation of 3D/hyper-realistic display techniques and systems
- 8) New devices for 3D/hyper-realistic display techniques and systems



Field Emission Display and CRT

Workshop Chair: Mikio Takai (Osaka Univ.)

The following topics will be covered in this workshop.

Topic Areas

- 1) Fundamental mechanisms and configurations
- Modeling and simulation 2)
- 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

VHF

Applied Vision and Human Factors

Workshop Chair: Taiichiro 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 such as augmented reality 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 factors,

- 6) Augmented reality display systems and their ergonomics
- 8) Actions and behaviors related to visually displayed information

OLED Displays OLED and Related Technologies

Workshop Chair: Shigeki 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

Large-Area Displays and Their Components

Workshop Chair: Hideyuki Kanayama (Panasonic)

This workshop will cover current topics concerning projection and largearea 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

All poster presenters in PRJ are required to give a brief oral presentation of 3 minutes with no discussion time.

PRJ

- such as dynamic range or spatio-temporal image artifacts
- 4) Display measurement methods relevant to human factors
- 5) Display ergonomics and their standards
- 7) Legibility and usability issues for text displays or electronic papers

Projection and

EP

Electronic Paper

Workshop Chair: Hiroshi Arisawa (Fuji Xerox)

This workshop 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 the brightness and a 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 and so on
- Various applications of e-Paper such as e-Books and e-Newspapers
- 6) Discussion of the social impact of e-Paper
- 7) Evaluation method taking account of human factors

All poster presenters in EP are required to give a brief oral presentation of 3 minutes with no discussion time.

MEMS MEET and Emerging Technologies for Future Displays and Devices

Workshop Chair: Masayuki 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

- Displays, imaging devices and other optical and electron devices using MEMS, nanotechnologies and emerging technologies
- Optical MEMS such as optical scanners, optical switches, optical mirrors, optical space modulators, optical filters, etc.
- 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

Display Electronic Systems

Workshop Chair: Toshiyuki Fujine (Sharp) This workshop will cover all aspects of electronic systems including hard-

ware as well as software on all kinds of displays.

Topic Areas

- 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

All poster presenters in DES are required to give a brief oral presentation of 3 minutes with no discussion time. | FLX

Flexible Displays

Workshop Chair: Hideo 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) Novel and/or high-performance flexible displays
- 2) Flexible/stretchable material and device strategy
- Fabrication methods, including printing techniques, soft lithography, roll-to-roll process and transfer techniques for high precision, large area and high productivity
- 4) Flexible substrate innovation (plastic film, metal foil, ultra-thin glass sheet, textile, paper, etc.) and encapsulation
- 5) Excellent TFTs in flexible organic/inorganic electronics
- 6) Display device principles (OLED, LC, electronic paper, etc.)
- 7) Tolerance evaluation for bending and stretching deformation
- 8) Revolutionary display applications (paper-like, bendable, foldable, roll-up screen, hanging, wearable, wrapping usages, etc.)



Touch Panels and Input Technologies

Workshop Chair: Ichiro Fujieda (Ritsumeikan Univ.)

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 workshop 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) In- and on-cell touch panels
- 2) Touch panel materials, devices and systems
- 3) Image sensors
- 4) 2D, 3D imaging devices and systems
- 5) Adaptive and personalized interfaces
- 6) Input systems for Augmented Reality
- 7) Human-Computer Interaction and other emerging interactive technologies

Short Presentation for Poster Presenters

"Short Presentation Session" for poster presenters to be introduced as part of PRJ, EP and DES workshops!

PAPER SUBMISSION

INSTRUCTIONS FOR SUBMISSION OF TECHNICAL SUMMARY

Submit a Technical Summary in PDF 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).

The file 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) **Preference of Workshop/Special Topics of Interest:** Indicate the closest matching Workshop/Special Topics of Interest.
- (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:** Enter the paper title, the names of all authors, all affiliations, information about the presenting author, the WS/Special Topics of Interest 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 usually conform to the 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.
- (7) "Short Presentation Session" for poster presenters to be introduced as part of PRJ, EP and DES workshops.

All poster presenters in PRJ, EP and DES workshops are required to give a brief oral presentation of 3 minutes with no discussion time.

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.

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/AD '12. The winners will be announced on the IDW website and given a plaque after the conference. We encourage that young researchers win the awards.

Invited Talks

Behind the Screen of NIC Shoichiro Iwasawa	CT's 200-in. Automultiscopic Display (NICT)	Electrochromism and Display Technology	Electrochemiluminescence as Novel
• Education for Disaster	Prevention Using Ultra-Realistic	Norihisa Kobayashi	(Chiba Univ.)
Dome Images -Learning Through Images of the Great East		• OLED Display Market –What's the Killer Application –	
Japan Earthquake-		Junzo Masuda	(iSuppli Japan)
Masami Okyudo	(Wakayama Univ.)	• Design of Backplanes a	nd Optical Enhancement Structures
 Recent Progress on Polymer LED Materials 		for Large-Area OLED Lighting Panels	
Takeshi Yamada	(Sumitomo Chem.)	Chieh-Wei Chen	(AU Optronics)
• Inkjet Printing of Single Hiromi Minemawari	Crystal Films for OTFT (AIST)	Active Matrices of S Organic TFTs	Solution-Crystallized High-Mobility
Present Status of Oxide Semiconductors		Junichi Takeya	(Osaka Univ.)
Toshio Kamiya	(Tokyo Inst. of Tech.)	Light Extraction from C	DLEDs with Plasmonic Structures
• High Performance Oxide Semiconductor TFTs for Display Applications		Takayuki Okamoto	(RIKEN)
		• Introduction to the Ergonomic Design Guidelines for Flat	
Joon Seok Park	(Samsung Advanced Inst. of Tech.)	- · ·	is Issued by a Special Committee of
 Displaying Contents, Knowledge and Experiences 		the Japan Ergonomics S	-
Miwako Doi	(Toshiba)	Yuzo Hisatake	(Japan Display)
• Current Technology Trends in Touch Panel Industry Kenji Nakatani (Touchpanel Labs.)		• Outline of London 2012 Olympic Games Public Viewing Using UHDTV (Super Hi-Vision)	
Efficient Color Reflective Displays for Cost Sensitive Applica-		Keiji Ishii	(NHK)
tions		Solution-Based Atmospheric Pressure Deposition Method for	
Gray A. Gibson	(HP Labs)	Oxide TFTs	
		Mamoru Furuta	(Kochi Univ. of Tech.)

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

IDW/AD '12 OVERSEAS ADVISORS

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The 19th International Display Workshops in conjunction with Asia Display 2012

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