IDW ’03
THE 10TH INTERNATIONAL DISPLAY WORKSHOPS

Workshops on
• LC Science and Technologies
• Active Matrix Displays
• FPD Manufacturing, Materials and Components
• CRTs
• Plasma Displays
• EL Displays, LEDs and Phosphors
• Field Emission Display
• Organic EL Displays
• 3D/Hyper-Realistic Displays and Systems
• Applied Vision and Human Factors
• Projection and Large-Area Displays, and Their Components

Topical Session on
• Electronic Paper

Advance Program

Fukuoka International Congress Center
Fukuoka, Japan
December 3 - 5, 2003
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Scientific and technological advances in research and development on information displays will be found at the 10th International Display Workshops (IDW’03). A feature of the IDW ’03 is an integration of the following eleven workshops and one topical session.

Workshops on
• LC Science and Technologies
• Active Matrix Displays
• FPD Manufacturing, Materials and Components
• CRTs
• Plasma Displays
• EL Displays, LEDs and Phosphors
• Field Emission Display
• Organic EL Displays
• 3D/Hyper-Realistic Displays and Systems
• Applied Vision and Human Factors
• Projection and Large-Area Displays, and Their Components

Topical Session on
• Electronic Paper

The three days conference will feature 403 papers, including one keynote address, two invited addresses, 64 invited papers, 158 oral and 178 poster presentation papers, and some additional late-news papers will also be arranged. Following keynote address on Wednesday morning, presentations will begin and continue in six parallel sessions through Friday. Two invited addresses will be provided on Thursday evening. Poster sessions and author interviews will enable participants to discuss presented issues in detail. Exhibitions from display and related industries will also be featured from Wednesday to Friday in parallel with workshops and a topical session. The IDW ’03 should be of interest not only to researchers and engineers, but also to those who manage companies and institutions in the display community.

Workshop on LC Science and Technologies
Recent advances in LC materials and device technologies are presented. The session covers from fundamental studies to recent development of LCD technologies. LC material design and simulation, LC alignment, various LC modes, FLC/AFLCs and reflective LCDs are discussed.

Workshop on Active Matrix Displays
Recent progresses in TFT technologies and active matrix displays are widely discussed in this workshop. These sessions feature fourteen topical invited talks and cover devices and process technologies for a-Si, poly-Si and organic TFTs. Their applications to electronic papers, LC-TVs, mobile LCDs and organic EL Displays are also discussed.

Workshop on FPD Manufacturing, Materials and Components
This workshop begins with invited papers dealing with the new technologies on FPDs and the related technologies. In the technical sessions, papers deal with optical components, backlights, substrates, process technologies, measurement system, etc. for FPDs. New session on manufacturing technologies is started from this year.

Workshop on CRTs
This workshop covers the entire field of CRT technologies. This year, a topical session of strategy for future CRTs is organized targeting coming digital broadcasting era. This session will focus on the technology for realizing excellent picture quality.

Workshop on Plasma Displays
The features of IDW ’03 are that submission of 70 papers and contributor’s regions are increased more than those of the last year. We will have a lot of papers about cell design, and driving techniques to improve image quality and luminous efficiency. Research on physical properties of MgO is also progressed and wall charge behavior in the actual PDPs is successfully observed. The theoretical approach for phosphors will achieve new materials soon.
Workshop on EL Displays, LEDs and Phosphors
This workshop covers the latest R&D achievements in inorganic ELDs, phosphors for emissive displays and solid-state illumination as well as LEDs. Invited talks present "Color by Blue" full-color ELDs, high-contrast ELDs with a GaN emitting layer and a black-thick-insulating layer, low-voltage excitation phosphors synthesized by liquid-phase reactions, improved LEDs for displays of high luminance and phosphors for white LEDs. Contributed papers also include interesting topics such as nano-sized particle phosphors and flexible powder ELDs. In addition, a joint session will be held with the PDP Workshop, which discusses mainly on design of new phosphors and analysis of degradation mechanism.

Workshop on Field Emission Display
Resent progresses in FEDs fabricated by using carbon-nanotubes (CNT) as field emitters are presented. Operating characteristics of full color ballistic electron surface-emitting display and feasibility of graphite-nanofiber FED are also discussed.

Workshop on Organic EL Displays
This workshop includes recent developments in organic EL materials, devices and fabrication process. New organic fluorescent and phosphorescent materials are reported, and highly efficient EL devices using these materials are presented. Durability of the EL devices will be also presented.

Workshop on 3D/Hyper-Realistic Displays and Systems
This workshop focuses on recent developments in 3D and immersive/hyper-realistic display. It also covers 3D image processing such as multiview interpolation, CGH and coding technology. Invited talks in this workshop include the topics from a forefront of 3D technologies and the recent situation of business promotion related to 3D display systems.

Workshop on Applied Vision and Human Factors
This workshop includes 19 papers with respect to human factors, moving image quality, color reproduction and applied vision. Especially objective measurement method of image display in relating to ergonomics will be widely discussed.

Workshop on Projection and Large-Area Displays, and Their Components
The worldwide hottest technologies for projection displays will make this workshop exciting. Invited talks will cover topics on high performance projectors using a DMD and a novel light valve for HDTV and digital cinema applications. To enhance display performance, LCOS technology and important components for projector, including optics, lamps, peripheral circuit and new light source will be discussed.

Topical Session on Electronic Paper
This session will focus on current topics on Electronic Paper, Paper-like Display, and Rewritable Paper. Various technologies, including electrophoretic, photochromic, liquid crystal, and novel systems will be reported. Concepts, systems, devices, and materials on this field are expected to be discussed.

Outstanding Poster Paper Awards
A limited number of outstanding poster papers will be awarded on December 4, from 19:10 to 19:25 at the conference room 501 just after the Invited Addresses.

Exhibition
IDW '03 exhibition will be held during 13:00 – 18:00 on December 3, 10:00 – 18:00 on December 4, and 10:00 – 13:30 on December 5. The latest display devices, appliances, manufacturing equipments, measuring instruments and materials for display technologies will be presented in the room 201 + 202. Please take this opportunity to enjoy informative discussion with exhibitors.
GENERAL INFORMATION

SPONSORSHIP
IDW '03 is sponsored by the Institute of Image Information and Television Engineers (ITE) and Society for Information Display (SID).

WORKSHOP SITE
Fukuoka International Congress Center
2-1, Sekijo-machi, Hakata-ku
Fukuoka 812-0032, Japan
Phone: +81-92-262-4111 Fax: +81-92-262-4701

ON-SITE SECRETARIAT
Telephone and fax machines for IDW '03 use will be temporarily set up in the secretariat room at Fukuoka International Congress Center (December 2-5). Phone & Fax: +81-92-262-5660

BANQUET
A buffet-style banquet will be held on December 3 from 18:40 to 20:30 in the Heian room at Hotel Okura Fukuoka. As the number of tickets is limited, you are urged to make an advance reservation by completing the enclosed registration form and returning it with payment.

EVENING GET-TOGETHER WITH WINE
A get-together will be held on December 2 from 18:00 to 20:00 at the lobby in front of conference room 501. Wine (sponsored by Merck Ltd., Japan) will be served to participants with a relaxed atmosphere for informal discussion.

REGISTRATION
Registration Fees
The registration fee for IDW '03 includes admission to the conference, a set of proceedings book and CD-ROM.

<table>
<thead>
<tr>
<th></th>
<th>Paid by Nov. 1</th>
<th>After Nov. 1</th>
</tr>
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<tbody>
<tr>
<td>Member of SID/ITE/ASO*</td>
<td>¥ 40,000</td>
<td>¥ 45,000</td>
</tr>
<tr>
<td>Non-Member</td>
<td>¥ 45,000</td>
<td>¥ 50,000</td>
</tr>
<tr>
<td>Student**</td>
<td>¥ 13,000</td>
<td>¥ 13,000</td>
</tr>
<tr>
<td>Life Member of SID/ITE</td>
<td>¥ 13,000</td>
<td>¥ 13,000</td>
</tr>
<tr>
<td>Banquet</td>
<td>¥ 10,000</td>
<td>¥ 11,000</td>
</tr>
</tbody>
</table>

*ASO: Academic Supporting Organizations
(See page 85 as well as "Supporting Organizations and Sponsors" at the end of each workshop/topical session section.)

**Student ID is required.

For additional set of proceedings book and CD-ROM
at the conference site ¥13,000
Airmail after the conference ¥18,000
Sea/Domestic mail after the conference ¥15,000

Payment
Three ways are provided for the registration.

(1) Mail or Fax Registration
Complete the registration form (FORM A) at the centerfold and send it to the secretariat together with all necessary payments no later than November 21, 2003.

IDW '03 Secretariat
c/o The Convention
Annecy Aoyama 2F
2-6-12, Minami-Aoyama
Minato-ku, Tokyo 107-0062, Japan
Phone: +81-3-3423-4180 Fax: +81-3-3423-4108
The registration fee (excluding hotel deposit) should be remitted by one of the following methods.

1. Bank transfer (only applicable to domestic participants) to:
   Account name: IDW
   Account no.: 4049628 (ordinary account)
   Bank name: Mizuho Bank
   Branch name: Sendai Branch

   Please attach a copy of your bank remittance form with the registration form to avoid possible troubles.

2. Bank check made payable to “IDW” together with the registration form

3. Credit card (only VISA or MasterCard accepted)

All above payments should be made in JAPANESE YEN. Also, please note that personal and traveler’s checks will not be accepted.

(2) e-Registration
Access the following URL.

http://idw.ee.uec.ac.jp/regist.html

The e-Registration is acceptable until November 21, 2003.

(3) On-site Registration
Conference registration desk will be open:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, December 2</td>
<td>18:00-20:00</td>
</tr>
<tr>
<td>Wednesday - Thursday, December 3-4</td>
<td>8:30-17:00</td>
</tr>
<tr>
<td>Friday, December 5</td>
<td>8:30-15:00</td>
</tr>
</tbody>
</table>

The on-site registration fee will be payable by:

1. Cash (JAPANESE YEN only)
2. Credit card (VISA or MasterCard only)

Bank transfer, bank check, and personal/traveler’s checks are not accepted. Payment by cash is recommended.

Cancellation Policy
Refunds for registration, banquet, additional sets of proceedings book and CD-ROM, etc. will be made on written cancellation received by IDW ’03 secretariat by November 1. For cancellations received after November 1 or no-shows, refunds will not be made. However, after IDW ’03 closes, a set of proceedings book and CD-ROM will be sent to the registrants who have paid the registration fees.

INQUIRY
IDW ’03 Secretariat
C/o The Convention
Annecy-Aoyama, 2F
2-6-12, Minami-Aoyama
Minato-ku, Tokyo 107-0062, Japan
Phone: +81-3-3423-4180 Fax: +81-3-3423-4108

Please pay attention to the website (http://idw.ee.uec.ac.jp/home.html) for latest information.
TRAVEL INFORMATION

OFFICIAL TRAVEL AGENT AND ACCOMMODATIONS
JTB Corp. has been appointed official travel agent for the Conference and will handle hotel accommodations. To make reservations, the attached form (Form B) should be completed and addressed to:

JTB Corp.
International Travel Division
Convention Center (CD101951-013)
2-3-11, Higashishinagawa, Shinagawa-ku, Tokyo 140-8604, Japan
Phone: +81-3-5796-5445, Fax: +81-3-5495-0685
e-mail: idw2003@itd.jtb.co.jp

Hotel reservation will also be made at the web site.
http://idw.ee.uec.ac.jp/regist.html

There will also be an on-site travel information desk during the Conference period to handle arrangements for transportation and sightseeing tours.

JAPAN RAIL PASS
Tourists visiting Japan from abroad can save with a Japan Rail Pass. These 7-, 14-, 21-day passes are valid for unlimited travel on the Shinkansen trains (except NOZOMI) and other JR lines, plus its buses and ferries.
For details, please ask your travel agent and purchase an exchange order at an authorized agent before coming to Japan. This pass cannot be purchased in Japan.
After you arrive in Japan, you turn in the exchange order to receive your JAPAN RAIL PASS at an applicable JR station that has a JAPAN RAIL PASS exchange office.

Ex.
Narita Airport Terminal 1 Travel Service Center 11:30-19:00
Ticket Office 6:15-11:30, 19:00-21:45
Narita Airport Terminal 2 Travel Service Center 11:30-19:00
Ticket Office 6:30-11:30, 19:00-21:50
Kansai Airport Ticket Office 5:30-23:00
Hakata Station Travel Service Center 10:00-20:00
Ticket Office 5:30-10:00, 20:00-23:00

VISAS
Visitors from countries whose citizens must have visas should apply to a Japanese consular office or diplomatic mission in their respective country.
For further details, please contact your travel agent or the local consular office in your country.
Attention: For some countries’ citizens, official documents prepared by the secretariat will be needed. Please ask the secretariat for its application at least two months before the Conference.

CLIMATE
The average temperature in Fukuoka during the period is around 9°C, with 13°C in the daytime and 5°C at night on the average.
FUKUOKA
Fukuoka City is located on the north of Kyushu Island, and has the geographical advantage of being close to the Korean Peninsula and the continent of China and has served as a gateway to import Asian continental cultures from olden times. The Fukuoka City of our time still plays an important role as one of the progressive cosmopolitan cities in Japan. The climate is rather mild with the annual mean temperature of about 17°C and is characteristic of the climate of the Japan Sea.

‘Hakata’ is another name of Fukuoka city and famous for ‘Hakata Ramen’. Some 250 shops offering genuine Hakata-style noodles in broth can be found in an area stretching from the Tenjin business district to the Nakasu area. Many of the shops do not open until the evening, and large numbers of business people can be seen enjoying a bowl of ramen after work. ‘Hakata Doll’ is also famous. A traditional local compliment to women was to say that someone looked like a Hakata Doll. The faces of the women are the most beautiful among the various Hakata Doll figures, which include warriors and children. The elegance of these dolls attracts many people.

PLACES OF INTEREST
Dazaifu Tenmangu Shrine (Fukuoka Prefecture)  
(at about 50 minutes by car, or 30 minutes by Nishitetsu train)  
This, the head shrine of all the Tenmangu Shrines in Japan, worships the god of learning, Michizane Sugawara. The plum tree to the right of the main building as you face it is called Tobiume (the flying plum tree), because it is said that the tree flew here to be with Michizane.

Kushida Shrine  
(get off at Gion subway station, walk 2 minutes, or take the Nishitetsu Bus to Canal City Hakata-mae bus stop)  
Kushida Shrine, the general tutelary shrine in Hakata, was built for the common people during the Heian Period. The huge ginkgo tree in the shrine grounds is Kushida Shrine's symbol. The shrine is the starting point of the Oiyama race held on the last day of the Hakata Gion Yamakasa Festival, one of the summer biggest events. Don't miss the Kazariyama (decorated floats) and the Hakata Historical Museum within the shrine. You can also visit Hakata Machiya Folk Museum, a replica of a town in Hakata during the Meiji and Taisho periods (1868-1926). Visitors can experience the lifestyle and festivals of the time and learn about traditional folk crafts.

Fukuoka City Museum  
(take a Nishitetsu Bus to Hakubutsukan Minami-guchi bus stop)  
Using the latest audio and visual technology, the museum introduces the history and life of Fukuoka and Hakata, Japan’s window to the world. The Gold Seal (Kin-in), a designated national treasure, can be found in the regular exhibition room. The Gold Seal was presented by the Emperor of China in AD 57 and unearthed on Shikanoshima Island in 1784.

More information is available on  
http://www.city.fukuoka.jp/index.html  
http://www.welcome-fukuoka.or.jp/english/index.htm

BANQUET
Wednesday, December 3  
18:40 – 20:30  
Hotel Okura Fukuoka  
See page 6 for details
Access to Conference Site

INTERNATIONAL FERRY TERMINAL (at BUSAN)
- By Jet Foil: ¥13,000/175min

FUKUOKA PORT INTERNATIONAL TERMINAL
- 3 min. by Taxi

FUKUOKA AIRPORT
- 6 min. by Subway: ¥250
- 30 min. by Taxi

HAKATA STATION
- 15 min. by Taxi or 20 min. by Bus

Fukuoka International Congress Center

By Jet Foil
- ¥16,200 / 60min.
- 6 flights per day

By Domestic Flights
- ¥27,900 / 120min.
- 3 flights per day

By Domestic Flights
- ¥27,900 / 90min.
- 45 flights per day

Access to Hotels

FUKUOKA AIRPORT
- 6 min. by Subway: ¥250
- 20-25 min. by Taxi: ¥2,000–2,500

HAKATA STATION
- 1 min. on foot
- 3 min. on foot
- 4 min. by Subway: ¥200
- 5 min. on foot
- 5 min. on foot
- 7 min. on foot
- Adjacent connected

Nakasu-Kawabata Station
- 3 min. on foot

Hakata Miyako Hotel
- 20-25 min. by Taxi: ¥2,000–2,500

Hotel Nikko Fukuoka
- 20-25 min. by Taxi: ¥2,000–2,500

Mitsui Urban Hotel Fukuoka
- 20-25 min. by Taxi: ¥2,000–2,500

Hotel Hokke Club Fukuoka
- 20-25 min. by Taxi: ¥2,000–2,500

President Hotel Hakata
- 20-25 min. by Taxi: ¥2,000–2,500

Hotel Okura Fukuoka
- 20-25 min. by Taxi: ¥2,000–2,500

Hakata Tokyu Inn
- 20-25 min. by Taxi: ¥2,000–2,500

Fukuoka International Congress Center

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Attention:
Map on Advance Program Booklet is incorrect (location of Hotel Nikko Fukuoka and Hotel Okura Fukuoka is reversed).
Please use this map (pdf data) for correct information.
IDW ’03

Wednesday, December 3

9:20 - 9:35 Main Hall
Opening

Master of Ceremony: T. Sugiura, Executive Chair

9:20
Opening Remarks
T. Uchida, General Chair
K. Suzuki, Program Chair

9:35 - 10:20 Main Hall
Keynote Address

Co-Chairs: K. Suzuki, Program Chair
T. Uchida, General Chair

9:35
Keynote Address - 1    Toward Industrial Applications of Carbon Nanotubes
S. Iijima
Meijo Univ., Japan

Thursday, December 4

18:00 - 19:10 Room 501
Invited Addresses

Co-Chairs: K. Betsui, Program Vice-Chair
Y. Iimura, Program Vice-Chair

18:00
Invited Address - 1    Strategy for Electronic Display Technology towards an Ubiquitous IT Environment
A. Kubota
NEDO, Japan

18:35
Invited Address - 2    Home Display Technology and Trends of Market
Y. Yamamoto
Sony, Japan
Workshop on LC Science and Technologies

Thursday, December 4

9:30 - 12:00 Poster/Al Room (Room 203+204)

Poster  LCTp1: LC Mode

LCTp1 - 1  A Geometric Influence of Electrode in In-Plane Switching Mode Cell
Inha Univ., Korea
*Sanayi Sys., Korea

LCTp1 - 2  A Novel LC Cell Mode : Pseudo-TN IPS Mode
Sanayi Sys., Korea
*Inha Univ., Korea

LCTp1 - 3  Study on Phase Retardation of Fringe-Field Driven Homogeneously Aligned LC Cell
*Chonbyk Nat. Univ., Korea
**BOE Hyundai Display Tech., Korea

LCTp1 - 4  A Dual-Domain VA LC Cell Using Domain Walls
K.-H. Park, J. S. Gwag, G.-D. Lee, T.-M. Kim, J. C. Kim, T.-H. Yoon
Pusan Nat. Univ., Korea

LCTp1 - 5  Optical Compensation of an MVA-LCD with Circular Polarizers
T. Houryu, Y. Iwamoto*, Y. Iimura
Tokyo Univ. of A&T, Japan
*Stanley Elec., Japan

LCTp1 - 6  Optical Compensation Method of In-Plane Switching Twisted Nematic Mode
Nagaoka Univ. of Tech., Japan
*Stanley Elec., Japan

LCTp1 - 7  Influence of Inter-Data Line Crosstalk on Viewing Characteristics for LCDs
Inha Univ., Korea
*Sanayi Sys., Korea

LCTp1 - 8  Analysis of Diffraction Efficiency of Holographic Polymer Dispersed Liquid Crystal for Polarization Converting Device
A. Ogiwara, K. Sogou, M. Takeda
Takamatsu Nat. College of Tech., Japan
LCTp1 - 9 Fabrication of Transmission Holographic Polymer Dispersed Liquid Crystal Based on Noncrosslinked Polymers
E. H. Kim, J. Y. Woo, B. K. Kim
Pusan Nat. Univ., Korea

9:30 - 12:00 Poster/AI Room (Room 203+204)
Poster LCTp2: Reflective LCDs

LCTp2 - 1 Reduced Power Consumption in a Single-Polarizer Reflective TN-LCD with Two Retardation Films
S. Yunoki, H. Hando, Y. Sakamoto, I. Fukuda
Kanazawa Inst. of Tech., Japan

LCTp2 - 2 Optical Characteristics of Reflective HAN Mode TFT-LCDs
D. H. Suh, Y. I. Park
BOE Hyundai Display Tech., Korea

LCTp2 - 3 Optical Characteristics of Transflective TN Mode TFT-LCDs
D. H. Suh, Y. I. Park, J. D. Noh, G. Son, J. Y. Lee
BOE Hyundai Display Tech., Korea

LCTp2 - 4 Vertically-Aligned Transflective LCD with Patterned Electrodes
Pusan Nat. Univ., Korea

9:30 - 12:00 Poster/AI Room (Room 203+204)
Poster LCTp3: FLC/AFLC

LCTp3 - 1 Pixel-Isolated Liquid Crystal Mode for Flexible Display Applications
Hallym Univ., Korea

LCTp3 - 2 Resolution Improvement of Projection Images in Vertically Aligned Ferroelectric Liquid Crystal Devices with Surface Relief Gratings
C.-J. Yu, Y. Choi, S.-D. Lee
Seoul Nat. Univ., Korea

LCTp3 - 3 Bistable Microlens Array Using Ferroelectric Liquid Crystals
Hallym Univ., Korea

LCTp3 - 4 Study on the Pretransitional Effect of Antiferroelectric LCD
Pusan Nat. Univ., Korea
LCTp4 - 1 Novel Phase Transition from Vertical Alignment to Optically Compensated Splay
*Chonbuk Nat. Univ., Korea
**BOE Hyundai Display Tech., Korea

LCTp4 - 2 Sensitizing Effect and Dichroic Ratio of Fluorescent Nematic Liquid Crystals
R. Yamaguchi, D. Hiroshima, S. Sato
Akita Univ., Japan

LCTp4 - 3 Anchoring Properties of Photoaligned Azo Dye Materials
V. Chigrinov, A. Muravski, H. S. Kwok, H. Takada*, H. Akiyama*, H. Takatsu*
Hong Kong Univ. of Sci. & Tech., Hong Kong
*Dainippon Ink & Chems., Japan

LCTp4 - 4 Application of Infrared Ellipsometry to Characterize Molecular Orientation of Rubbed Polyimide Films
I. Hirosawa
Japan Synchrotron Radiation Res. Inst., Japan

LCTp4 - 5 New Alignment Method by Imprinting of LC Alignment on Polymer Layers
J.-W. Jung, J.-H. Kim
Hallym Univ., Korea

LCTp4 - 6 Dependence of Threshold Behavior upon Surface Distribution of Polymer Chains in a TN-LC Cell
J. S. Gwag, T.-M. Kim, G.-D. Lee, J. C. Kim, T.-H. Yoon
Pusan Nat. Univ., Korea

LCTp4 - 7 Azimuthal Anchoring Properties Related to Distribution of Polyimide Chains in a TN-LC Cell
Pusan Nat. Univ., Korea

LCTp5 - 1 Stretching Deformation of Porous Polyolefin Films for Aligning Liquid Crystal
NHK, Japan
*Tokyo Univ. of Sci., Japan

LCTp5 - 2 Numerical Study on the Operation of Super In-Plane Switching Display Mode
*Inha Univ., Korea
**Sanayi Sys., Korea
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<th>Session</th>
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<td>LCTp5 - 3</td>
<td>New Optical Method of Liquid Crystal Shear Viscosity Measurements</td>
<td>S. Pasechnik, V. Chigrinov*, V. Tsvetkov, D. Shmeliova, A. Voronov</td>
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<td>Moscow State Ac. of Instr. Eng. &amp; Computer Sci., Russia</td>
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<td></td>
<td>*Hong Kong Univ. of Sci. &amp; Tech., Hong Kong</td>
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<td>LCTp5 - 4</td>
<td>Texture Transition of SmC* Liquid Crystal in a Magnetic Field</td>
<td>B. Dalanbayar, Z. Mykytyuk</td>
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<td>Lviv Polytechnic Nat. Univ., Ukraine</td>
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<td>LCTp5 - 5</td>
<td>Physico-Chemical Properties of Liquid Crystals Having a Carbonyl Group at the Terminal Position</td>
<td>Y. Morita, T. Tasaka, K. Kabu, H. Okamoto, S. Takenaka</td>
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<td>Yamaguchi Univ., Japan</td>
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<td>LCTp5 - 6</td>
<td>The Development of Chiral Materials and the Genetic QSPR Studies of HTP Property</td>
<td>D.-J. Chen, J.-H. Ma, Y.-P. Lin, W.-C. Chen</td>
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<td>ITRI, Taiwan</td>
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**LCT1: Mobile Displays**

**14:00 - 15:05**

**Room 409+410**

**Chair:** S. Satoh, Akita Univ., Japan  
**Co-Chair:** S. Komura, Hitachi, Japan

**14:00**

**LCT1 - 1:** Invited Optical Modes for BiNem LCDs  
C. Joubert, A. Carton, D. Stoenescu, T. Scheffer  
Nemoptic, France

**14:25**

**LCT1 - 2**  
The Development of High-Brightness Transflective TFT-LCD with New Convex Shape Transflector  
J. Kobayashi, K. Joten, Y. Konishi, H. Banba, Y. Iwai, Y. Takubo  
Toshiba Matsushita Display Tech., Japan

**14:45**

**LCT1 - 3**  
The Effect of Bending on Flexible Liquid Crystal Displays  
P. A. Cirkel  
Philips Res., The Netherlands

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- - Lunch - -
LCT2: Fast Response LCDs

15:35 - 17:00 Room 409+410

Chair: C. Joubert, Nemoptic, France
Co-Chair: M. Ozaki, Osaka Univ., Japan

15:35
LCT2 - 1: Invited Polymer-Stabilized Ferroelectric Liquid Crystal for Flexible Display Applications
H. Fujikake, H. Sato, T. Murashige*
NHK, Japan
*Tokyo Univ. of Sci., Japan

16:00
LCT2 - 2 Fabrication and Characteristics of Polymer-Stabilized V-Mode FLCDs and Their Application to Color Sequential Full-Color LCDs
Tokyo Univ. of Sci., Yamaguchi, Japan
*Dainippon Ink & Chems., Japan
**Nano Loa LLI, USA

16:20
LCT2 - 3 Frequency Modulation TN-LCDs with Fast Response Speed Fabricated by Doping Nanoparticles
T. Miyama, M. Oh-kochi, H. Shiraki, Y. Shiraishi, Y. Sakai, N. Toshima, S. Kobayashi
Tokyo Univ. of Sci., Yamaguchi, Japan

16:40
LCT2 - 4 Passively Addressed Photo-Aligned Ferroelectric Liquid Crystal Display
Hong Kong Univ. of Sci. & Tech., Hong Kong

Author Interviews
17:00 - 18:00

Friday, December 5

9:00 - 10:20 Room 409+410

LCT3: LC Simulation

9:00
LCT3 - 1 Numerical Study on the Dynamic Response of Directors for Vertically Aligned Liquid Crystal
Sanayi Sys., Korea
*Inha Univ., Korea
9:20  LCT3 - 2  Dynamic Characteristics of LCDs Driven by Complex Electric Field

Inha Univ., Korea
*Sanayi Sys., Korea

9:40  LCT3 - 3  Spice Model for a Dynamic Liquid Crystal Pixel Capacitance

*Ghent Univ., Belgium
**IMEC, Belgium

10:00  LCT3 - 4  LCD Optimization and Modeling

D. Yakovlev, V. Chigrinov*, H.-S. Kwok*
Saratov State Univ., Russia
*Hong Kong Univ. of Sci. & Tech., Hong Kong

- - Break - -

10:40 - 11:45  Room 409+410
LCT4: Novel Processing & Measurement

Chair: Y. Ouchi, Nagoya Univ., Japan
Co-Chair: M. Suzuki, Merck, Japan

10:40  LCT4 - 1: Invited  Multifunctional Glassy Liquid Crystals for Photonics

S. H. Chen
Univ. of Rochester, USA

11:05  LCT4 - 2  UV Exposure/ Thermal Development and Thermal Writing/ UV Fixing in the LC Cell Using Crosslinkable Polymer Film

R. Yamaguchi, R. Wada, R. Mizutori, S. Sato
Akita Univ., Japan

11:25  LCT4 - 3  Measuring the Three Viscosity Coefficients of Liquid Crystals Using a Homogeneous Cell

Y. Funatsu, T. Miyashita, T. Ishinabe, T. Uchida
Tohoku Univ., Japan

- - Lunch - -
14:00 - 15:20 Room 409+410

**LCT5: High Performance LCDs**

Chair: H. Okada, Toyama Univ., Japan  
Co-Chair: M. Kimura, JSR, Japan

14:00  
**LCT5 - 1** Advanced Liquid Crystal Materials for TFT Mobile Applications  
*M. Heckmeier, G. Luessem, K. Tarumi*  
Merck, Germany

14:20  
**LCT5 - 2** A Novel Optically Compensative Structure for Gray-Scale Inversionless OCB-LCDs  
*T.-J. Chang, P.-L. Chen*  
AU Optronics, Taiwan

14:40  
**LCT5 - 3** Color Analysis of Different LC Modes  
*M.-C. Wu, C.-M. Chang, Y.-E. Wu, P.-L. Chen, K.-Y. Lin*  
AU Optronics, Taiwan

15:00  
**LCT5 - 4** High Performance 10.4" Tablet LCD with the FFS Technology  
BOE Hyundai Display Tech., Korea  
*Chonbuk Nat. Univ., Korea*  

-- Break --

15:40 - 17:00 Room 409+410

**LCT6: LC Alignment**

Chair: S. H. Chen, Univ. of Rochester, USA  
Co-Chair: M. Hasegawa, IBM Res., Japan

15:40  
**LCT6 - 1** New Developments in Photo-Aligning with Azo-Dye Layers  
*V. Chigrinov, V. Kozenkov, H. S. Kwok, H. Takada*,  
H. Takatsu*  
Hong Kong Univ. of Sci. & Tech., Hong Kong  
*Dainippon Ink & Chems., Japan*

16:00  
**LCT6 - 2** Pretilt Angle Control of Liquid Crystals by Photo-Aligning Films of Polyimide Containing Azobenzene in the Backbone Structure  
S. Ushioda***,  
*Tohoku Univ., Japan  
**RIKEN, Japan*
16:20
LCT6 - 3  Novel Photoalignment Material Based on Chloromethylated Polyimide
Chonbuk Nat. Univ., Korea

16:40
LCT6 - 4  Behavior of Multidirectional Ion Beam Treatment of Nematic Liquid Crystals on a-C:H Films
J. Y. Hwang, D. S. Seo
Yonsei Univ., Korea

Supporting Organizations:
- LC physics and condensed matter forum, JLCS
- Chemistry and LC material forum, JLCS
- Liquid crystal display forum, JLCS
- LC photonics and optical device forum, JLCS
- Bionics and lyotropic liquid crystal forum, JLCS
- Technical Group on Information Display, ITE
- Technical Committee on Electronic Information Displays, Electronics Society, IEICE
- Technical Committee on Electron Devices, Electronics Society, IEICE

SID ’04
Society for Information Display
Symposium, Seminar & Exhibition
May 23 – 28, 2004
Seattle, WA, USA
http://www.sid.org

IDW ’04
The 11th International Display Workshops
December 8-10, 2004
Niigata, Japan
Workshop on Active Matrix Displays

Wednesday, December 3

10:40 - 11:50 Main Hall

**AMD1: LC-TV Technologies**

**Chair:** J. Jang, Kyung Hee Univ., Korea  
**Co-Chair:** T. Sunata, Philips Mobile Display Syss. Kobe, Japan

10:40
**AMD1 - 1:** Invited Technology Trends on Large Area LC-TVs  
*H. Take*  
*Sharp, Japan*

11:05
**AMD1 - 2:** Invited Super IPS Technology as a Wide Viewing Angle for TV Applications  
*H. Choi*  
*LG.Philips LCD, Korea*

11:30
**AMD1 - 3** Large-Area TFT-LCD Using MHA Mode and FFD for TV Applications  
*C.-R. Lee, C.-G. Lin, M.-C. Liu, H.-C. Wang*  
*Chunghwa Picture Tubes, Taiwan*

- - Break - -

**14:00 - 15:10 Main Hall**

**AMD2/EP1: Active-Matrix Electronic Paper**

**Chair:** M. Omodani, Tokai Univ., Japan  
**Co-Chair:** S. Utsunomiya, Seiko Epson, Japan

14:00
**AMD2/EP1 - 1:** Invited Driving Schemes for Active Matrix Electrophoretic Displays  
*G. F. Zhou, M. T. Johnson, R. Cortie, R. Zehner*,  
*K. Amundson*, A. Knaian*, B. Zion*  
*Philips Res. Labs., The Netherlands*  
*E Ink, USA*

14:25
**AMD2/EP1 - 2:** Invited Microcup® Electrophoretic Displays, Grayscale and Color Rendition  
*J. Chung, J. Hou, W. Wang, L.-Y. Chu, W. Yao, R. C. Liang*  
*SiPix Imaging, USA*

14:50
**AMD2/EP1 - 3** Printed Active Matrix Arrays for Electronic Paper Displays  
*S. E. Burns, C. Kuhn, K. Jacobs, J. D. Mackenzie,  
C. Ramsdale, J. Watts, M. Etchells, K. Chalmers, P. Devine,  
N. Murton, S. Norval, J. King, J. Mills, H. Sirringhaus,  
R. H. Friend*  
*Plastic Logic, UK*

- - Break - -
AMDp - 1  Organic Thin-Film Transistor with Self-Organized Pentacene
S. H. Kim, H. Y. Choi, J. Jang
Kyunghyee Univ., Korea

AMDp - 2  A New Negative Feedback Based Poly-Silicon AM-OLED Pixel Circuit with Highly Linear Transfer Characteristics
B. Mazhari, Y. Chauhan
Indian Inst. of Tech., India

AMDp - 3  Polymeric Gate Dielectrics for Flexible Organic Thin-Film Transistors
L. M. Do, K. S. Suh
ETRI, Korea

AMDp - 4  Thin-Film Passivation for Longevity of Organic Light-Emitting Devices and Organic Thin-Film Transistor
G. H. Kim, J. H. Lee, S. H. Kim, Y. S. Yang, J. H. Youk,
S. C. Lim, L.-M. Do, K. S. Suh
ETRI, Korea

AMDp - 5  Effect of Mechanical and Electrical Stresses for MIM Adopting Si-Rich Silicon-Nitride on a Plastic Substrate
H. C. Nam, J. H. Hur, J. Jang, J. H. Jeong*, S. B. Kwon*
Kyunghyee Univ., Korea
*Soft Pixel, Korea

AMDp - 6  Fabrication of Polycrystalline Silicon Thin Films on Plastic Substrates for Flexible Active-Matrix Displays
Y. H. Kim, S. K. Park, D. G. Moon, J. I. Han, I. H. Kim*,
J. Jang*
KETI, Korea
*Kyunghyee Univ., Korea

AMDp - 7  High Performance P-Channel Single-Crystalline Si TFT Fabricated inside a Location-Controlled Grain by Micro-Czochralski Process
V. Rana, R. Ishihara, Y. Hiroshima*, D. Abe*, S. Inoue*,
T. Shimoda*, J. W. Metselaar, C. I. M. Beenakker
Delft Univ. of Tech., The Netherlands
*Seiko Epson, Japan

AMDp - 8  High Performance Fully Self-Aligned Symmetric LDD LTPS-TFTs
Toppoly Optoelect., Taiwan

AMDp - 9  Degradation of LTPS-TFT Devices Caused by Electrostatic Discharge
Y.-M. Tasi**
Nat. Chiao-Tung Univ., Taiwan
*ITRI, Taiwan
**Toppoly Optoelect., Taiwan
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<td>S. Tsujikawa, Y. Taniguchi, H. Yamaguchi</td>
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<th>Crystal Growth of Polycrystalline Si Prepared by Combined Method of SPC Followed by ELA</th>
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<td>*Sanyo Elec., Japan</td>
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<th>Gate Oxide Integrity of Microwave-Plasma-Grown Silicon Oxide</th>
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<td>A. Baba, C. Shin, T. Asano</td>
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<th>Fabrication of Poly-Si Thin-Film Transistor Using Gate Oxide Layer Formed by Wet Ozone-Enriched Oxidation</th>
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<td>M. Seki, P. N. Hai, S. Nishio, Y. Nakata, S. Horita</td>
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<td>JAIST, Japan</td>
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<td>Kyung Hee Univ., Korea</td>
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AMDp - 21  Pulse Number Dependence of Spatial Period of Grain Boundary in Si Thin Film Crystallized by Linearly Polarized Pulse Laser with High Incident Angle
H. Kaki, T. Ootani, S. Horita
JAIST, Japan

AMDp - 22  Effect of a-Si Thickness on Ni-Mediated Crystallization
Kyung Hee Univ., Korea

AMDp - 23  Effects of SiO₂ Nano Cap on Ni Mediated Crystallization of Amorphous Silicon
Kyung Hee Univ., Korea

AMDp - 24  Characteristic and Reliability of Low Temperature Poly-Si TFTs on Large Area Panel Manufacturing
ERSO/ITRI, Taiwan

AMDp - 25  Study on Low Temperature Poly-Si Thin Film Transistors with Different Source/Drain Structures
C.-Y. Huang, C.-H. Tsai, C.-C. Chen
ERSO/ITRI, Taiwan

AMDp - 26  Dopant Activation and Damage Recovery of Ion-Shower-Doped Poly-Si during Activation Annealing
Hongik Univ., Korea
*Samsung SDI, Korea

AMDp - 27  Implementation of 2.2-in. QVGA LTPS TFT-LCDs with Integration of p-Type Driving Circuitry
J.-D. Park, J.-W. Jang, Y.-S. Kim, S.-H. Jeong, Y.-M. Ha
LG.Philips LCD, Korea

AMDp - 28  Power Consumption Estimation for Various TFT-LCD Modules
M. R. Herrmann, S. Hagino
Philips Mobile Display Syss. Kobe, Japan

AMDp - 29  DAC and Output Buffer for AM-LCDs Employing Poly-Si TFT
Seoul Nat. Univ., Korea

AMDp - 30  Study of Reducing Memory Capacity in Feedforward Driving by Using Image Compression
N. Okuda, J. Someya, M. Yamakawa
Mitsubishi Elec., Japan

AMDp - 31  A Novel Shift-Register Driving Scheme Using PMOS TFT
S.-C. Lin, H.-Y. Lin, C.-M. Chiu, Y.-H. Tai
Toppoly Optoelect., Taiwan
**AMDp - 32** New High-Voltage Generator with Two-Point Voltage Detection Method Using Low-Temperature Poly-Silicon Technology for TFT-LCDs
H. Hasegawa, Y. Suzuki, M. Yoshida, N. Sasaki
Tokai Univ., Japan

**AMDp - 33** A Novel Shift Register Circuit Design for LTPS Application
T. H. Hsieh, H. G. Wu, J. P. Pang
InnoLux Display, Taiwan

**AMDp - 34** A New High-Voltage Generator Using Variable Boosting Step Method for TFT-LCD Drivers
K. Umeda, Y. Suzuki, M. Yoshida, J. Yokota
Tokai Univ., Japan

**AMDp - 35** A New Protrusionless VA Mode
T.-M. Hsieh, Y.-E. Wu, Y.-H. Huang, S.-P. Tai, P.-L. Chen
AU Optronics, Taiwan

**AMDp - 36** Gate Line and Data Line Effects on MVA Mode LCDs
M.-C. Wu, Y.-E. Wu, P.-L. Chen, K.-Y. Lin
AU Optronics, Taiwan

**AMDp - 37** Pixel Size Effect on Multi-Domain Vertical Alignment Liquid Crystal Display
S.-P. Tai, Y.-H. Huang, J.-C. Liang, Y.-E. Wu, P.-L. Chen
AU Optronics, Taiwan

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**14:00 - 16:30** Poster/AI Room (Room 203+204)

**Poster** AMD/OELp: Active-Matrix OLED

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<th>AMD/OELp - 1</th>
<th>An Active Matrix OLED Display Employing an Improving Gray Scale Structure</th>
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<th>AMD/OELp - 2</th>
<th>AM-OLED Pixel Circuits Suitable for TFT Array Testing</th>
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<th>Design of a Novel 6-bit Current Data Driver System for AM-OLED</th>
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<td>W.C. Hsueh, C.Y. Meng*, A. Shin, Y.M. Tsai</td>
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<th>AMD/OELp - 4</th>
<th>A Self-Compensated Voltage Programming Pixel Structure for Active-Matrix Organic Light Emitting Diodes</th>
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<tr>
<td>S. M. Choi, O. K. Kwon</td>
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<td>Hanyang Univ., Korea</td>
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AMD/OELp - 5  A High-Uniformity Voltage Programmed Active-Matrix OLED
ERSO/ITRI, Taiwan

AMD/OELp - 6  Apparatus for Improving Yields of Active-Matrix OLED Panels
C.-C. Kuo*,**, W.-T. Liao*, H.-R. Han*, Y.-H. Yeh***, W.-C. Wang*
*Windell, Taiwan  
**Nat. Chung Hsing Univ., Taiwan  
***ERSO/ITRI, Taiwan

AMD/OELp - 7  Active-Matrix Organic Light Emitting Diode Drive Circuit
C.-C. Kuo*,**, H.-R. Han*, W.-T. Liao*, M.-D. Chen***, W.-C. Wang*
*Windell, Taiwan  
**Nat. Chung Hsing Univ., Taiwan  
***ERSO/ITRI, Taiwan

AMD/OELp - 8  A New Poly-Si TFT Based AM-OLED Driving Method with Both Amplitude and Pulse Width Modulation
J. Y. Jeong, J. Kim
Univ. of Suwon, Korea

AMD/OELp - 9  Development of IR Drop Simulator for AM-OLED
Samsung SDI, Korea

Author Interviews
17:00 - 18:00

Thursday, December 4

9:00 - 10:25  Main Hall

AMD3/OEL4: AM-OLED (1)

Chair: K. Mameno, Sanyo Elec., Japan  
Co-Chair: R. Hattori, Univ. of Tokyo, Japan

9:00  AMD3/OEL4 - 1: Invited  Technological Challenge toward AM-OLED TV
T. Urabe  
Sony, Japan

9:25  AMD3/OEL4 - 2  Pixel Circuit for a-Si AM-OLED
S. Ono, Y. Kobayashi, K. Miwa, T. Tsujimura  
IDTech, Japan
9:45 AMD3/OEL4 - 3  A Uniform 10-in. Color Active-Matrix OLED with New Pixel Driving Circuit
ERSO/ITRI, Taiwan

10:05 AMD3/OEL4 - 4  Optimization of a Time Ratio Gray Scale Method for OLED Display
Seiko Epson, Japan

- - Break - -

10:40 - 12:05 Main Hall

AMD4/OEL5: AM-OLED (2)

Chair: T. Urabe, Sony, Japan
Co-Chair: H. Hamada, Sanyo Elec., Japan

10:40 AMD4/OEL5 - 1: Invited High-Resolution AM-OLED Display Using White Emitter and Color Filter Array
Sanyo Elec., Japan

11:05 AMD4/OEL5 - 2  A New 6-bit Digital-Type Current Driven Structure of OLED Display
AU Optronics, Taiwan

11:25 AMD4/OEL5 - 3  Comparison of Vth Compensation Ability Among Voltage Programming Circuits for AM-OLED Panels
Samsung SDI, Korea
*Hanyang Univ., Korea

11:45 AMD4/OEL5 - 4  5-TFT Pixel Circuit Design for Active-Matrix Organic Light Emitting Diode Compensating Non-Uniformity of Poly-Si TFTs and OLEDs
Seoul Nat. Univ., Korea

- - Lunch - -
14:00 AMD5: Organic TFT Technologies

Chair: G. F. Zhou, Philips Res. Labs., The Netherlands
Co-Chair: N. Matsuo, Himeji Inst. of Tech. Japan

14:00 AMD5 - 1: Invited Organic Thin Film Transistors Incorporating Crystalline Polyfluorene Semiconductor Films

C. J. Newsome, T. Kawase*, T. Shimoda*, D. J. Brennan**
Cambridge Res. Lab. of Epson, UK
*Seiko Epson, Japan
**Dow Chem., USA

14:25 AMD5 - 2: Polymer-Dispersed Micro-Encapsulated Liquid Crystal Displays Driven by Organic Thin-Film Transistor Arrays Fabricated by Printing Methods

ERSO/ITRI, Taiwan

14:45 AMD5 - 3: Organic TFT Driven Liquid Crystal Cell with Anodic Oxidized Gate Insulator and Double Protection Layers

Y. Fujisaki, Y. Inoue, H. Sato, T. Kurita, S. Tokito, H. Fujikake
NHK, Japan

15:05 AMD5 - 4: Effects of Alternating Magnetic Field on Pentacene Film for Organic Thin Film Transistors

J. H. Park, Y. S. Lee, J. S. Choi, E. S. Kim, J. S. Ro
Hongik Univ., Korea

- - Break - -

15:40 AMD6: Flexible Display

Chair: H. Abe, ALTEDEC, Japan
Co-Chair: M. Ikeda, Toshiba, Japan

15:40 AMD6 - 1: Invited High-Resolution TFT Display on Transparent Plastic Substrate

J. Jang
Kyung Hee Univ., Korea

16:05 AMD6 - 2: Invited Flexible and Deformable Silicon Thin-Film Transistor Backplanes

S. Wagner, H. Gleskova, P.-H. I. Hsu, J. C. Sturm, Z. Suo
Princeton Univ., USA
AMD6 - 3  Reliability of Low Temperature a-Si TFTs for Plastic TFT-LCDs
H. Nishiki, T. Okabe, K. Nakamura, K. Yamada, M. Okamoto
Sharp, Japan

Author Interviews
17:00 - 18:00

Friday, December 5

9:00 - 10:25 Main Hall

AMD7: TFT Technologies (1)

Chair: P. Migliorato, Univ. of Cambridge, UK
Co-Chair: S. Horita, JAIST, Japan

9:00
AMD7 - 1: Invited  Advanced TFT Process Technologies for Active-Matrix Displays
H. Abe, Y. Yamamoto
ALTEDEC, Japan

9:25
AMD7 - 2 TFT Characteristics of Nucleation Controlled Poly-Si Thin Film by Using Conventional ELA Equipment
J. Yanase, H. Okumura, H. Kanou, H. Hayama
NEC, Japan

9:45
AMD7 - 3 Metal-Induced Crystallization of Amorphous Silicon Using a Cap Layer
Kyung Hee Univ., Korea

10:05
AMD7 - 4 Growth of Large Si Grains under Room Temperature by Phase-Modulated Excimer-Laser Annealing Method
H. Ogawa, M. Hiramatsu, Y. Kimura, M. Jyumonji, Y. Taniguchi, M. Matsumura
ALTEDEC, Japan

- - Break - -

10:40 - 12:05 Main Hall

AMD8: TFT Technologies (2)

Chair: S. Wagner, Princeton Univ., USA
Co-Chair: Y. Nakata, ALTEDEC, Japan

10:40
AMD8 - 1: Invited Dynamic Behaviour of Polycrystalline and Single Grain Silicon TFTs
P. Migliorato, F. Yan, S. Inoue*, T. Shimoda*, R. Ishihara**
Univ. of Cambridge, UK
*Seiko Epson, Japan
**Delft Univ. of Tech., The Netherlands
**Dependence of Transistor Characteristics on Trap Densities at the Front- and Back-Oxide Interfaces in Thin-Film Transistors**

M. Kimura, S. Inoue*, T. Shimoda*
Ryukoku Univ., Japan
*Seiko Epson, Japan

**Low Threshold Voltage Poly-Si TFTs Formed Using Tantalum Oxide Gate Dielectric**

M. O’Sullivan, N. Young, C. Glasse, R. Wilks
Philips Res. Labs., UK

**Reliability of Low Temperature Poly-Si TFT and Its Application to 3-in. UXGA LCD Panel**

ERSO/ITRI, Taiwan

--- Lunch ---

**AMD9: Mobile Display Technologies**

Chair: H. Hayama, NEC, Japan
Co-Chair: T. Nishibe, Toshiba Matsushita Display Tech., Japan

**13:45 - 15:15 Main Hall**

**AMD9 - 1:** Invited Mobile Phones and Displays: New Business and Growth

N. Suzuki, M. Salmela, J. Kimmel*
Nokia Japan, Japan
*Nokia Res. Ctr., Finland

**AMD9 - 2:** Invited Advanced Driver IC Techniques for Mobile AM-LCDs

Y. Kudo, T. Eriguchi, A. Akai, T. Matsudo*, Y. Yokota**
Hitachi, Japan
*Hitachi Displays, Japan
**Renesas Tech., Japan

**AMD9 - 3:** New Low-Power Driving Algorithm for TFT-LCDs

M. Yamashita, H. Watanabe, S. Hagino
Philips Mobile Display Syss. Kobe, Japan

**AMD9 - 4:** Security Display: Smartcard-Like LCD for Visually Decrypting Encrypted Information

Philips Res. Labs., The Netherlands

--- Break ---
15:35 - 17:00  
**Main Hall**

### AMD10: SOG Technologies

**Chair:** T. Asano, Kyushu Inst. of Tech., Japan  
**Co-Chair:** Y. Kudo, Hitachi, Japan

**15:35**  
**AMD10 - 1:** Invited  
Quite a New Approach for System-on-Glass Technology Based on Low-Temperature Polycrystalline Silicon  
T. Nishibe, N. Ibaraki  
Toshiba Matsushita Display Tech., Japan

**16:00**  
**AMD10 - 2**  
A Flat-Panel Imager Utilizing a-Si TFT Array Technology  
Sharp, Japan

**16:20**  
**AMD10 - 3**  
Poly-Si TFT-LCD with High Efficiency Integrated Charge Pump Circuits  
*Philips Res. Labs., UK  
**Philips Mobile Display Syss. Kobe, Japan  
***Mitsubishi Elec., Japan

**16:40**  
**AMD10 - 4**  
A High-Efficient Level Shifter Using Active Body-Bias Technique for LCD Driver in LTPS Technology  
M.-D. Ker, W.-J. Hsu, Y.-H. Li*, A. Shih*, Y.-M. Tasi*  
Nat. Chiao-Tung Univ., Taiwan  
*Toppoly Optoelect., Taiwan

**Author Interviews**  
17:00 - 18:00

**Supporting Organizations:**  
Chemistry and LC material forum, JLCS  
LC physics and condensed matter forum, JLCS  
Liquid crystal display forum, JLCS  
Technical Committee on Electron Devices, Electronics Society, IEICE  
Technical Committee on Electronic Information Displays, Electronics Society, IEICE  
Technical Group on Information Display, ITE  
Technical Committee on Silicon Device and Materials, IEICE
Workshop on FPD Manufacturing, Materials and Components

Wednesday, December 3

10:40 - 11:55 Room 502+503

FMC1: Advanced Technologies

Chair: J. C. Lapp, Corning, USA
Co-Chair: T. Miyashita, Tohoku Univ., Japan

10:40 FMC1 - 1: Invited Novel Fine Pattern Transcription by Nano Imprint Lithography
Y. Hirai
Osaka Pref. Univ., Japan

11:05 FMC1 - 2: Invited A Compact and High Optical Transmission SAW Touch Screen
F. Nakazawa, S. Sano, T. Katsuki, Y. Takahashi, Y. Sato
Fujitsu Labs., Japan

11:30 FMC1 - 3: Invited Development of the Unified Image and Sound Module
M. Tashiro*, T. Nishimura*,**
*Authentic, Japan
**NXT Asia Services, Japan

- - Lunch - -

13:50 - 15:20 Room 502+503

FMC2: Manufacturing Technologies (1)

Chair: K. R. Sarma, Honeywell, USA
Co-Chair: Y. Ukai, Sony, Japan

13:50 FMC2 - 1: Invited Atmospheric Pressure Plasma Cleaning for LCD Manufacturing Processes
M. Yoshitani
Dainippon Screen Mfg., Japan

14:15 FMC2 - 2: Invited 0.5µm-Resolution Lithography for Large Substrates
Holtronic Tech., Switzerland
*Seiko Epson, Japan
**Microfab, Liechtenstein
### Wednesday December 3

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<th>14:40</th>
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<th>Development of Spin Processor for LTPS LCDs</th>
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<td>H. Shibazaki</td>
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<td>Dainippon Screen Mfg., Japan</td>
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<th>15:00</th>
<th>FMC2 - 4</th>
<th>Solid Laser Crystallization of a-Si Films Using a Newly Developed 200W Nd:YAG$^{2\omega}$ Pulse Laser Annealing System for Poly-Si TFT-FPDs</th>
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<td>K. Tamagawa, H. Ikeda, T. Ohnishi, K. Kuwahara, M. Kikuchi, M. Hayama, K. Nakamura</td>
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- - Break - -

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<tr>
<th>15:30 - 17:00</th>
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<td><strong>FMC3: Manufacturing Technologies (2)</strong></td>
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<th>FMC3 - 1: Invited Future Prospects of Photolithographic Materials for LTPS TFT toward a Submicron Process</th>
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<td>T. Takeda, T. Hamada</td>
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<th>15:55</th>
<th>FMC3 - 2: Invited Advanced Optical Metrology for Next-Generation Color Filter Processes and TFT-LCD Manufacturing</th>
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<td>A. Sato, H. Lu*, M. Mino*, R. Morrison*, J. Roth*</td>
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<td>Canon Sales, Japan</td>
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<td>*Zygo, USA</td>
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<th>16:20</th>
<th>FMC3 - 3</th>
<th>Liquid Crystal Drop and Vacuum Assembling System for Large Size Substrates</th>
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<td>A. Hirai, Y. Nakayama, K. Imaizumi, M. Mitsumoto, T. Murayama</td>
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<th>16:40</th>
<th>FMC3 - 4</th>
<th>New Concept for LCD Cell Process</th>
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<td>S. Kajiwara</td>
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<td>Shibaura Mechatronics, Japan</td>
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</tbody>
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**Author Interviews**

17:00-18:00
Thursday, December 4

9:00 - 10:30 Room 502+503

FMC4: Materials

Chair: H. S. Soh, LG. Philips LCD, Korea
Co-Chair: D. K. Choi, Dow Corning, USA

9:00
FMC4 - 1: Invited The Main Sealant for Liquid Crystal Dropping Method
K. Kojima
Kyoritsu Chem., Japan

9:25
FMC4 - 2 Development of Transparent Conductive Films for Organic Light-Emitting Diodes
ULVAC, Japan

9:45
FMC4 - 3: Invited Photosensitive Low-k Spin-On-Glass (SOG) for Flat Panel Displays
T. Nagahara, H. Matsuo, A. Yamamoto, A. Igawa
Clariant Japan, Japan

10:10
FMC4 - 4 Performance of TFT Passivated with Low-k Dielectrics
D. K. Choi, J. H. Hur*, H. J. Kim*, H. C. Nam*, S. Maghsoodi,
R. R. Warner, G. A. Cerny, J. Jang*
Dow Corning, USA
*Kyung Hee Univ., Korea

- - Break - -

9:30 - 12:00 Poster/AI Room (Room 203+204)

Poster FMCp: FPD Manufacturing, Materials & Components

FMCp - 1 Pinholes in the External Electrode Fluorescent Lamps
G. Cho
Kwangwoon Univ., Korea

FMCp - 2 Improvement of Efficiency in the EEFL (External Electrode Fluorescent Lamp) for LCD Backlight
Yonsei Univ., Korea

FMCp - 3 Development of a New Low CTE (Coefficient of Thermal Expansion) Plastic Substrate for Active Matrix LCDs
T. Ito, A. Sugizaki*, T. Eguchi*
Sumitomo Bakelite, Japan
*Tech. Res. Assn. for Advanced Display Materials, Japan
The Method of Reducing Mechanical Bending Stress in Flexible Displays Incorporated with Encapsulation Layers
J. B. Park, D. S. Seo, Y. H. Kim*, S. K. Park*, D. G. Moon*, J. I. Han*
Yonsei Univ., Korea
*KETI, Korea

The Study of Excluding Fiber from Seal in New Process
K. N. Yang, J.K. Lu, Y.J Liao
AU Optronics, Taiwan

Low Temperature Poly Silicon Crystallized by Using Rapid Photothermal Annealing for Large-Area Applications
Kyung Hee Univ., Korea

Isotropic Photonic Band Gap in 2-D Photonic Microcavity with Penrose Quasicrystal Pattern
Hong Kong Baptist Univ., Hong Kong
*City Univ. of Hong Kong, Hong Kong

Micro-Reflection Properties of Transmissive TFT-LCDs
P.-L. Chen, C.-M. Chang, C.-Y. Tsai
AU Optronics, Taiwan

Advanced Transflective TFT-LCDs Using Dual Thickness Color Filter
M.-C. Chang, C.-M. Chang, P.-L. Chen
AU Optronics, Taiwan

- - Lunch - -
14:45  
**FMC5 - 3**  
Polycarbonate Film Substrates for Flexible Display Applications  
M. Schaepkens, M. Yan, T.-W. Kim, A. Erlat, K. Flanagan,  
C. Heller, P. McConnelee, G. Gillette,  
A. Duggal  
General Elec., USA

15:05  
**FMC5 - 4**  
Advanced Photo Spacer with Elasticity & Softness (Photo Spacer for 6th & 7th Generation)  
H.-C. Shin  
Advanced Display Materials Service & Tech., Korea  
*Korea Res. Inst. of Standard & Sci., Korea

--- Break ---

15:35 - 17:00  
**Room 502+503**  
**FMC6: Color Filters**

Chair: E. F. Schieffer, E. I. DuPont de Nemours, USA  
Co-Chair: T. Taguchi, Toppan Printing, Japan

15:35  
**FMC6 - 1**: Invited  
A New Color Filter Structure for LCD-TVs  
R. Harada, M. Sugawara, N. Moriya, S. Hayashi, M. Iida  
Dai Nippon Printing, Japan

16:00  
**FMC6 - 2**: Novel Reflective Color Filters Using Patterned Cholesteric Liquid Crystals  
K. Ishizaki, Y. Iizuka, N. Itoh, N. Moriya  
Dai Nippon Printing, Japan

16:20  
**FMC6 - 3**: Carbon-Pigmented Photoresist for Black Matrix of Color Filter Used in Liquid Crystal Displays  
S. Abe, K. Niwa, A. Kumano  
JSR, Japan

16:40  
**FMC6 - 4**: Thermal Imaging System for LCD Color Filter Manufacturing  
E. F. Schieffer, R. A. Coveleskie  
E. I. DuPont de Nemours, USA

Author Interviews  
17:00-18:00
Friday, December 5

9:00 - 10:25 Room 502+503

FMC7: Backlight Systems (1)

Chair: R. S. West, Lumileds Lighting, USA
Co-Chair: Y. Iimura, Tokyo Univ. of A&T, Japan

9:00
FMC7 - 1: Invited Perspectives on White LED Lighting
T. Taguchi
Yamaguchi Univ., Japan

9:25
FMC7 - 2: LED Backlighting for Large Area LCD TV’s
R. S. West, H. Konijn*, S. Kuppens*, N. Pfeffer*, Y. Martynov*,
T. Heemstra*, T. Yagi**, G. Harbers
Lumileds Lighting, USA
*Lumileds Lighting, The Netherlands
**Lumileds Lighting, Japan

9:45
FMC7 - 3: Double-Side Emissive Backlight Unit for Transmissive
LCD Using a Single Functional Light-Guide Plate
K. Käläntär, S. Matsumoto, T. Katoh, T. Mizuno
Nippon Leiz, Japan

10:05
FMC7 - 4: Curved Prism Array for Controlling Directivity of LED
Backlight
M. Shinohara, J. Takagi, M. Oba, M. Takeuchi
Omron, Japan

- - Break - -

10:40 - 12:10 Room 502+503

FMC8: Backlight Systems (2)

Chair: M. Suzuki, IDTech., Japan
Co-Chair: M. Takagi, Harison Toshiba Lighting, Japan

10:40
FMC8 - 1: Invited Design Consideration for a Backlight Unit for a
Large Area LCD-TV
M. Suzuki, K.-T. Huang*, H.-S. Hsieh*
IDTech, Japan
*Chi Mei Optoelect., Taiwan

11:05
FMC8 - 2: Highly Efficient LCD Backlight Having No Optical Film
H. Suzuki, M. Horiguchi, T. Okumura, A. Tagaya, Y. Koike
Keio Univ., Japan
11:25  
**FMC8 - 3**  
**Fabrication of Bezelless and High Brightness Multi-Lamp Backlight for TFT-LCD Multivision**  
H. Lee, J. Park, J. Hur, S. Lim*  
*General Lighting & Displays, Korea  
*Dankook Univ., Korea

11:45  
**FMC8 - 4**: **Invited**  
**Glass Phosphor Embedding Semiconductor Nanocrystals for a Flat Panel Display**  
N. Murase, C. Li  
*Nat. Inst. of Advanced Ind. Sci. & Tech., Japan*

--- Lunch ---

14:00 - 15:05  
Room 502+503  
**FMC9: Optical Films (1)**

**Chair**: C. Doornkamp, Philips Res. Labs., The Netherlands  
**Co-Chair**: T. Nagatsuka, Nitto Denko, Japan

14:00  
**FMC9 - 1**: **Invited**  
**Next Generation Mobile LCDs with In-Cell Retarders**  
C. Doornkamp, B. M. I. van der Zande, S. J. Roosendaal,  
L. W. G. Stofmeel, J. J. Glabbeek, J. T. M. Osenga,  
J. A. M. Steenbakkers  
*Philips Res., The Netherlands*

14:25  
**FMC9 - 2**  
**Mura-Improved Thin Wide View Film for LCDs**  
E. Aminaka, Y. Ito, M. Murayama, N. Fukagawa, M. Wada,  
H. Mori, K. Takeuchi, K. Mihayashi  
*Fuji Photo Film, Japan*

14:45  
**FMC9 - 3**  
**Wide-Viewing-Angle Transflective TFT-LCD with Ultra-Thin Liquid Crystalline Polymer Compensators**  
T. Ogasawara, E. Yoda, T. Uesaka, T. Toyooka  
*Nippon Oil, Japan*

- - Break - -
Friday December 5

15:40 - 16:40 FMC10: Optical Films (2)

Chair: J. Bruinik, Philips Res. Labs., The Netherlands
Co-Chair: H. Mori, Fuji Photo Film, Japan

15:40
FMC10 - 1 Advanced ARTON™ Thin Film for Retarders
M. Sekiguchi, T. Ushino, H. Shibata, N. Miyaki, Y. Sakakura
JSR, Japan

16:00
FMC10 - 2 Development of a Directional Diffuser
L. Murillo-Mora, H. Honma, Y. Maekawa, M. Takano,
K. Hirose, A. Sato, F. Iwata
Toppan Printing, Japan

16:20
FMC10 - 3 Advanced Anti-Static and Low-Reflection Coatings Using Functional Nano-Particles of Porous SiO₂ and Sb₂O₅
M. Kumazawa, T. Hirai, M. Matsuda, M. Komatsu
Catalysts & Chems. Ind., Japan

Author Interviews
17:00-18:00

Supporting Organizations:
The Japanese Society of Printing Science and Technology
Japan Society of Colour Material
The Technical Association of Photopolymers, Japan
The Imaging Society of Japan
Society of Photographic Science and Technology of Japan
Japan Printed Circuit Association
The Society of Radtech, Japan
The Society of Polymer Science, Japan
The Japanese Research Association of Organic Electronics Materials
The Chemical Society of Japan
Chemistry and LC material forum, JLCS
Liquid crystal display forum, JLCS
LC Photonics and optical device forum, JLCS
Technical Group on Information Display, ITE
Technical Committee on Electronic Information Displays, Electronics Society, IEICE

Asia Display 2004
International Display Research Conference (IDRC)
September 21-24, 2004
Seoul, Korea
Workshop on CRTs

Wednesday, December 3

14:00 - 16:30 Poster/AI Room (Room 203+204)

Poster  CRTp: CRTs

CRTp - 1  A Newly Developed Multi-Leaf Grille for Reducing Vibration
K. Saita, M. Okada
Sony, Japan

CRTp - 2  A New Clear Gun Design for 17-in. and 19-in. Multi-Vision Display Application
H.-L. Chang, C.-H. Yeh
Chunghwa Picture Tubes, Taiwan

Thursday, December 4

9:00 - 9:50 Room 411+412

CRT1: Strategy for Future CRTs

Chair: P. A. M. van der Heide, LG.Philips Displays, The Netherlands
Co-Chair: T. Saito, Tokyo Cathode Lab., Japan

9:00
CRT1 - 1: Invited  Picture Quality of CRTs
S. Shirai
Hitachi Displays, Japan

9:25
CRT1 - 2: Invited  Advanced Phosphor Screen for Next Generation CRTs
K. Ohno
Sony, Japan

- - Break - -

10:40 - 11:45 Room 411+412

CRT2: Magnetics

Chair: B. B. Dasgupta, ADI, USA
Co-Chair: M. Maeda, Maeda Consulting, Japan

10:40
CRT2 - 1: Invited  Material Design of Magnetic Shielding Components in CRT Considering the Degaussing Process
T. Inoue, H. Matsuoka, K. Fujita, T. Hiratani, Y. Tanaka
JFE Steel, Japan
CRT2 - 2 Automated Convergence Correction During Yarning (ITC)
B. B. Dasgupta, S. O. Shik
ADI, USA

CRT2 - 3 A High Sensitivity Velocity Modulation Coil for Projection CRTs
S. Sakurai, T. Hisada, S. Watanabe*, T. Asano*
Hitachi, Japan
*Hitachi Displays, Japan

- - Lunch - -

13:40 - 15:30 CRT3: Screens & CRT Components
Room 411+412

Chair: D. den Engelsen, LG.Philips Displays, The Netherlands
Co-Chair: T. Sugawara, Asahi Glass, Japan

CRT3 - 1: Invited Color Gamut Expansion in CRTs
D. den Engelsen, S. Sluyterman, I. Heynderickx*
LG.Philips Displays, The Netherlands
*Philips Res. Labs., The Netherlands

CRT3 - 2 Study on Breakage of Glass Bulbs in Frit-Sealing Process
H. Takamuku
Asahi Glass, Japan

CRT3 - 3 Improvement of Electronic Conductivity of Wet Coating ITO Film for CRTs
H. Inokuma, Y. Otani
Asahi Glass, Japan

CRT3 - 4: Invited Lifetime Performance of Cathodes in CRTs
P. A. M. van der Heide, G. Gaertner*, D. Barratt**
LG.Philips Displays, The Netherlands
*Philips Res. Labs., Germany
**LG.Philips Displays, UK

CRT3 - 5 A Study of Oxide Cathodes with Sub-Micrometer Powder
Chunghwa Picture Tubes, Taiwan

- - Break - -
CRT4: Electron Guns

Chair: H. Y. Chen, Chunghwa Picture Tubes, Taiwan
Co-Chair: Y. Wada, Matsushita Toshiba Picture Display, Japan

15:40
CRT4 - 1 An Advanced Tri-Potential Focus Electron Gun in CRTs for High-Brightness and High-Definition TV
H. Ishihara, N. Endo, Y. Tagawa, S. Masataka
Sony, Japan

16:00
CRT4 - 2 Innovative Gun Concepts for Super-Slim Tubes
H. Steinhauser, R. Gelten, J. Snel
LG.Philips Displays, The Netherlands

16:20
CRT4 - 3 A Revolutionary Gun Design for a Maskless CRT with Reduced Depth
W. L. IJzerman, M. P. C. M. Krijn
Philips Res. Labs., The Netherlands

16:40
CRT4 - 4 A High-gm and Low-Emittance Cathode with Convex Surface
Mitsubishi Elec., Japan

Author Interviews
17:00 - 18:00

Supporting Organizations:
Technical Group on Information Display, ITE
Technical Committee on Electronic Information Displays, Electronics Society, IEICE

Outstanding Poster Paper Awards

Thursday, December 4
19:10 – 19:25
Conference Room 501,
Fukuoka International Congress Center
See page 5 for details
**Workshop on Plasma Displays**

**Wednesday, December 3**

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<td>10:40</td>
<td>PDP1: Cell Design</td>
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<tr>
<td>Chair:</td>
<td>G. Oversluizen, Philips Res. Labs., The Netherlands</td>
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<tr>
<td>Co-Chair:</td>
<td>T. Shinoda, Fujitsu Labs., Japan</td>
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<tr>
<td>10:40</td>
<td>PDP1 - 1: Invited</td>
<td>Development of Performance- and Cost-Oriented HD-PDP TV with High-Picture Quality Using High-Efficiency Hexagonal Array Structure</td>
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<td>Samsung SDI, Korea</td>
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<td>11:00</td>
<td>PDP1 - 2</td>
<td>Luminous Efficiency Improvement by Stripe Barrier Rib Structure with Discharge Deactivation Films</td>
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<td>S. Nagano, K. Jo, K. Hirose, H. Kawarazaki</td>
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<td>Mitsubishi Elec., Japan</td>
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<td>11:20</td>
<td>PDP1 - 3</td>
<td>PDP with Step-Formed Box Barrier Ribs</td>
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<td>14:00</td>
<td>PDP2: Discharge Mechanism &amp; Driving Method</td>
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<tr>
<td>Chair:</td>
<td>K. H. Whang, Seoul Nat. Univ., Korea</td>
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<td>Co-Chair:</td>
<td>S. Mikoshiba, Univ. of Electro-Commun., Japan</td>
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<td>14:00</td>
<td>PDP2 - 1</td>
<td>Observation of Wall Charge Distribution during Reset and Address Discharges</td>
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<td>D. C. Jeong, K.-W. Whang</td>
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<td>Seoul Nat. Univ., Korea</td>
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14:20
PDP2 - 2  
Diagnostics of PDP Micro-Discharge Plasma using Two-Dimensional Emission and Thomson Scattering Measurements
S. Hassaballa, M. Yakushiji, K. Tomita, Y.-K. Kim, K. Uchino, K. Muraoka
Kyushu Univ., Japan

14:40
PDP2 - 3  
High Efficient Positive Column Discharge Driven by New Low-Voltage Driving Scheme for AC PDP
H. Kim, K.-H. Park, J. Y. Kim, H.-S. Tae
Kyungpook Nat. Univ., Korea

Author Interviews
17:00 - 18:00

Thursday, December 4

9:05 - 10:25  
Room 501
PDP3/PH1: Phosphors for PDPs

Chair: L. F. Weber, Plasmaco, USA
Co-Chair: Y. Nakanishi, Shizuoka Univ., Japan

9:05
PDP3/PH1 - 1: Invited  
Study of New Luminescent Materials for PDPs
S. Kubota
Tohoku Univ., Japan

9:25
PDP3/PH1 - 2  
Oxidation of Doped Europium in BaMgAl_{10}O_{17} by Annealing Studied with X-ray Absorption Fine Structure Measurement
Japan Synchrotron Radiation Res. Inst., Japan
*Mitsubishi Chem., Japan
**Kasei Optonix, Japan

9:45
PDP3/PH1 - 3  
Characterization of (Y,Gd)(P,V)O₄:Eu²⁺ for PDP Red Phosphor
C. Okazaki, T. Suzuki, M. Shiiki
Hitachi, Japan

10:05
PDP3/PH1 - 4  
Luminescent Characteristics of Gd-Codoped CaMgSi₂O₆:Eu²⁺ Phosphors
Tottori Univ., Japan
*Sumitomo Chem., Japan

Author Interviews
17:00 - 18:00
### Thursday, December 4

#### 9:30 - 12:00
**Poster/Al Room (Room 203+204)**

### Poster PDPp1: Poster (1)

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<td>T. Okamura, T. Kitagawa, K. Kolke, S. Fukuda</td>
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<th>High Performance Optical Filter for PDP</th>
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<td>Y. Nakatsugawa, A. Tsuzuki, I. Inoue, Y. Suzuura</td>
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<th>Influence of Image Sticking on Electro-Optical Characteristics in AC PDPs</th>
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<th>Image Sticking Phenomena of Adjacent Cells Induced by Iterant Discharge Cells in 42-in. PDP TV</th>
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<td>*Chinese Univ. of Hong Kong, Hong Kong</td>
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<td>Univ. of Suwon, Korea</td>
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PDPp1 - 12 Flicker Index Method for Evaluating Flicker in Color PDP
X. Zhang, C. Liu, Z. Liu, J. Zhang
Xi'an Jiaotong Univ., China

PDPp1 - 13 Improvement of Discharge Characteristics of Zn$_2$SiO$_4$:Mn by Surface Modification with Metal Oxides
G. Y. Hong, B. Y. Jeong, J. S. Yoo
Chung-Ang Univ., Korea

PDPp1 - 14 Adjustment of Driving Characteristics by Modification of Phosphor Surface in AC PDP
I. Ozaki, N. Hori, Y. Kawanami, C. Okazaki*, M. Shiiki*
Fujitsu Hitachi Plasma Display, Japan
*Hitachi, Japan

PDPp1 - 15 Measurement of Ion-Induced Secondary Electron Emission Coefficient $\gamma_i$, Work Function, and Discharge Voltage of Vacuum and Air Annealed MgO Protective Layer in AC PDP
J. Y. Lim, H. S. Jeong, W. B. Park, J. S. Oh, E. H. Choi
Kwangwoon Univ., Korea

PDPp1 - 16 Influences of Degradation of MgO and Phosphor on Ion-Induced Secondary Electron Emission Coefficient and Basic Discharge Characteristics in AC PDP
Kwangwoon Univ., Korea

PDPp1 - 17 Influence of Secondary Electron Emission Coefficient of MgO Protective Layer on Electrical Discharge Characteristics in AC PDP
Kwangwoon Univ., Korea

PDPp1 - 18 Measurement of Oblique Ion-Induced Secondary Electron Emission Coefficient $\gamma_i$
Kwangwoon Univ., Korea

PDPp1 - 19 Secondary Electron Emission Characteristics of MgAl$_2$O$_4$ as Protecting Layer for AC PDPS
T. Hirakawa, H. Shinoda, T. Tezuka, H. Uchiike
Saga Univ., Japan

PDPp1 - 20 Verification of Secondary Electron Emission Coefficients Calculated by Empirically Obtained Formula through 2D Discharge Simulation
LG Elect., Korea
*Seoul Nat. Univ., Korea

PDPp1 - 21 Water-Jet Etching Characteristics of Aqueous-Based Green Tape for Fabrication of Barrier Ribs of PDP
Y. Cho, Y.-S. Kim
Hongik Univ., Korea
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<td><strong>PDPp2 - 7</strong> High Luminous Efficient AC PDP Optimized for High Xe Discharge Gas</td>
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T. Hirakawa, T. Tezuka, H. Shinoda, H. Uchiike
Saga Univ., Japan

PDPp2 - 11 Influence of Dielectric Thickness on Electro-Optical Characteristics in AC PDP
Kwangwoon Univ., Korea

PDPp2 - 12 Simulation Studies on Influence of He Concentration on Discharge Characteristics of AC PDPs in \((\text{He}_x - \text{Ne}_{1-x}) - \text{Xe}\) Mixture
I. S. Lee, S. J. Yoon, K. Y. Choi
LG Elect., Korea

PDPp2 - 13 Xe Content and Working Gas Pressure Dependence on Surface Type AC Positive Column Micro-Discharge
J. Y. Kim, H. Kim, H.-S. Tae
Kyungpook Nat. Univ., Korea

PDPp2 - 14 Optimized Design for Energy Recovery Circuits in PDP Driving System
S. Liu, X. Yan, W. Feng
TCL Multimedia Elect., China

PDPp2 - 15 Development of Infrared Thomson Scattering System for Diagnostics of PDP Micro-Discharge Plasma
K. Tomita, Y.-K. Kim, S. Hassaballa, K. Uchino, K. Muraoka
Kyushu Univ., Japan

PDPp2 - 16 Three-Dimensional Measurement of Electron Temperature and Plasma Density in Coplanar AC PDPs
Kwangwoon Univ., Korea

PDPp2 - 17 Diagnostics of Three Dimensional Behaviors of Sustain Discharge in AC PDP with Auxiliary Pulses
Y. Shintani, S. Kawai, K. Tachibana, T. Sakai*, N. Kosugi**
Kyoto Univ., Japan
*Display Res. Labs., Japan
**Matsushita Elec. Ind., Japan

PDPp2 - 18 3-D Simulation of Sustain Discharge with Auxiliary Pulse in AC PDP
Y. Hirano, Y. Murakami, K. Ishii, K. Tachibana*
NHK, Japan
*Kyoto Univ., Japan

PDPp2 - 19 Modeling of Micro Discharge in Radio Frequency Coplanar PDP
M. Hiranuma, S. Uchida, F. Tochikubo, T. Watanabe
Tokyo Metropolitan Univ., Japan

PDPp2 - 20 New Self-Erasing Discharge Mode for Improving Luminous Efficiency without Reduction of Driving Margin in AC PDP
B.-G. Cho, H.-S. Tae, S.-I. Chien
Kyungpook Nat. Univ., Korea
PDPp2 - 21 Improvement of Color Temperature Using Auxiliary Address Pulse Driving Scheme in 42-in. WVGA Plasma Display Panel
Kyungpook Nat. Univ., Korea

PDPp2 - 22 Effects of a Bias-Modulation Method on Modified Sustain Pulse
B. J. Rhee, S. H. Lee, Y. Y. Choi, J. S. Jung, Y. D. Kang, Y. K. Lee
LG Elect., Korea

PDPp2 - 23 New Driving Method for Reducing Address Period of AC PDP
Inha Univ., Korea
*Univ. of Incheon, Korea

PDPp2 - 24 Analysis of Wall Voltage Controllability by RMSP (Ramp Biased Multiple Short Pulses) Reset Pulse in AC PDP
J. H. Yang, J. S. Kim, J. C. Jung, K.-W. Whang
Seoul Nat. Univ., Korea

PDPp2 - 25 Characterization of Stairway Waveform Sustaining Pulse for AC PDP
H.-S. Kim, J.-S. Lim, J.-Y. Kim
Sejong Univ., Korea

Author Interviews
17:00 - 18:00

Friday, December 5

9:00 - 10:20 Room 501
PDP4: Discharge Gases & Components

Chair: H. Tolner, Large Flat Display Tech. Consultant, The Netherlands
Co-Chair: M. Uchidoi, Pioneer, Japan

9:00 PDP4 - 1 Discharge Characteristics of Ne+Xe+N2 Gas Mixtures
Sejong Univ., Korea
*LG Elect., Korea

9:20 PDP4 - 2 Optical Characteristics and Luminous Efficacy of Ne-Buffered N2 AC PDP
Samsung Advanced Inst. of Tech., Korea
*Samsung SDI, Korea
9:40  PDP4 - 3  Development of 256-Output SOI PDP Address Driver IC for Tape Carrier Package
K. Takasugi, A. Hosokawa, A. Fujiwara, K. Takahashi
NEC Elect., Japan

10:00  PDP4 - 4  Newly Developed Optical Filter for Attaching Directly on Plasma Panel
K. Kolke, T. Shinozaki, H. Saigou, T. Okamura,
T. Kitagawa, S. Fukuda
Mitsui Chems., Japan

- - Break - -

10:40 - 12:00  Room 501
PDP5: Physical Properties of MgO Thin Films

Chair:  L. JY Lu, AU Optronics, Taiwan
Co-Chair:  H. Uchiike, Saga Univ., Japan

10:40  PDP5 - 1  Study of Evaporated MgO Thin Film by Cathodoluminescence
T. Hirakawa, H. Uchiike
Saga Univ., Japan

11:00  PDP5 - 2  Effect of Carbon Nanotube on Luminance Efficiency of AC PDPs
K.-S. Yoo, Y.-S. Kim
Hongik Univ., Korea

11:20  PDP5 - 3  Energy Distribution of Ion-Induced Secondary Electron Emission from MgO Thin Films
T. Tsujita, T. Nagatomi, Y. Takai, Y. Morita*, M. Nishitani*,
M. Kitagawa*, T. Uenoyma**
Osaka Univ., Japan
*Matshushita Elec. Ind., Japan
**Panasonic AVC Networks, Japan

11:40  PDP5 - 4  Comparison of Simulation for Ion Angle and Energy Distributions at the Cathode to Experimentally Measured Results for Excited Xe Species in a PDP Cell
S. S. Yang, S. W. Ko, S. Mukherjee, J. K. Lee
Pohang Univ. of Sci. & Tech., Korea

- - Lunch - -
PDP6: New Concept PDPs & Manufacturing Processes

Chair: R. L. Johnson, Info Tech., USA
Co-Chair: K. Nunomura, NEC Plasma Display, Japan

14:00
PDP6 - 1: Invited Luminance Characteristics of Closed-Cell Type Barrier Ribs Processed by Capillary Molding Process
Y.-S. Kim, K.-I. Kim, T.-J. Chang, Y. Cho, S.-H. Yoon
Hongik Univ., Korea

14:20
PDP6 - 2 Full Plated Metal Electrodes for PDPs
S. Fukuta, K. Sugawa*, K. Inoue, S. Kasahara, K. Sakita, K. Betsui
Fujitsu Labs., Japan
*Fujitsu Hitachi Plasma Display, Japan

14:40
PDP6 - 3 Development of AC PDP with New Structure Using Thick-Film Ceramic Sheet Technology
Noritake, Japan

15:00
PDP6 - 4 Highly Luminous 1-Meter Fine Plasma Tube Array for Wall Display
Fujitsu Labs., Japan

Author Interviews
17:00 - 18:00

Sponsor:
Plasma Display Technical Meeting

Saga Forum
One Day PDP Forum and After Dinner Discussion
December 6, 2003
Takeo Hot Spring, Saga

Detail information will be sent by E-mail.

Plasma Display Technical Meeting
Workshop on EL Displays, LEDs and Phosphors

Wednesday, December 3

14:00 - 16:30 Poster/Al Room (Room 203+204)

Poster PHp: ELDs & Phosphors

**PHp - 1** Fabrication of $\text{Y}_2\text{O}_3: \text{Eu}$ Nano-Thin-Film Phosphor by Using RF Magnetron Sputtering Method

N. Tsukahara, O. Miura, H. Murakami
ULVAC, Japan

**PHp - 2** Luminescence Properties of Nano-Particle Phosphor Added Conductive Materials

M. Hirakawa, O. Miura, H. Murakami
ULVAC, Japan

**PHp - 3** Improvement of Light Emission Efficiency of $\text{TiO}_2: \text{Sm}$ Nano-Thin-Film Phosphor

C. Koakutsu, O. Miura, H. Murakami
ULVAC, Japan

**PHp - 4** Luminescence Enhancement of Ba in $\text{SrTiO}_3: \text{Pr}$, Al Red Phosphor for Field Emission Display

ETRI, Korea
*Chungnam Nat. Univ., Korea
**Youngdong Univ., Korea

**PHp - 5** The Origin of Cathodoluminescence Enhancement of $\text{ZnS}: \text{Ag}, \text{Cl}$ Surface-Treated by Using a Combination of Stirring and Ultrasonication in KOH Solutions

KAIST, Korea
*Seoul Semiconductor, Korea

**PHp - 6** The Effect of the Crystal Structure on the PL Intensity of Eu Doped Metal Ortho-Vanadates

J. H. Kang, W. B. Im, D. C. Lee, D. Y. Jeon
KAIST, Korea

**PHp - 7** An ac-Powder Electroluminescent Flexible Display

S. Okamoto, K. Tanaka, Y. Izumi
NHK, Japan

**PHp - 8** Characteristics of AlON-TiON Insulators for Inorganic Electroluminescent Display

J. W. Lim, S. J. Yun, J. H. Lee
ETRI, Korea

**PHp - 9** Improvement of Electroluminescent Properties by RF-Sputtered $\text{SiN}_x: \text{Ta}, \text{Zr}$ Insulating Layers

S. Tokunaga*, **, A. Mikami*
*Kanazawa Inst. of Tech., Japan
**Sanyo Elec., Japan
PHp - 10  Eu-Activated Ga₂O₃-SnO₂ Multicomponent Oxide Thin-Film Electroluminescent Phosphors
T. Minami, Y. Suzuki, T. Miyata
Kanazawa Inst. of Tech., Japan

PHp - 11  Fabrication of SrS:Cu,F Thin-Film EL Devices with MOS Structure on Si Substrate
S. Hakamata, M. Ehara, H. Fukada, H. Kominami,
Y. Nakanishi, Y. Hatanaka*
Shizuoka Univ., Japan
*Aichi Univ. of Tech., Japan

PHp - 12  Effect of Driving Frequency on the EL Characteristics of Y₂O₃-Based Phosphor TFEL Devices Using a Thick-Ceramic Insulator
T. Minami, Y. Suzuki, T. Miyata
Kanazawa Inst. of Tech., Japan

Thursday, December 4

9:00 - 9:05 Room 501
Opening

9:00 Opening Remarks
H. Kobayashi, Workshop Co-Chair

9:05 - 10:25 Room 501
PDP3/PH1: Phosphors for PDPs

PDP3/PH1 - 1: Invited Study of New Luminescent Materials for PDPs
S. Kubota
Tohoku Univ., Japan

PDP3/PH1 - 2  Oxidation of Doped Europium in BaMgAl₁₀O₁₇ by Annealing Studied with X-ray Absorption Fine Structure Measurement
Japan Synchrotron Radiation Res. Inst., Japan
*Mitsubishi Chem., Japan
**Kasei Optonix, Japan

C. Okazaki, T. Suzuki, M. Shiiki
Hitachi, Japan
Luminescent Characteristics of Gd-Codoped CaMgSi₂O₆:Eu²⁺ Phosphors

Tottori Univ., Japan
*Sumitomo Chem., Japan

--- Break ---

PH2: ELDs & Phosphors for FEDs

Room 501

Chair: X. Wu, iFire Tech., Canada
Co-Chair: M. Shiiki, Hitachi, Japan

10:40 - 12:00

PH2 - 1: Invited Defect Reduction and Blue Phosphor Performance Improvement for TDEL Displays Using Color by Blue

Sanyo Elec., Japan
*iFire Tech., Canada

11:10

PH2 - 2

Green Electroluminescence of EuGa₅S₆ Thin Film

K. Tanaka, S. Okamoto
NHK, Japan

11:30

PH2 - 3: Invited Low Voltage Cathodoluminescent Properties of Phosphors Synthesized by Liquid Phase Reaction

H. Kominami, Y. Nakanishi
Shizuoka Univ., Japan

--- Lunch ---

PH3: ELDs

Room 501

Chair: A. M. Srivastava, General Elect., USA
Co-Chair: A. Mikami, Kanazawa Inst. of Tech., Japan

13:50 - 15:30

PH3 - 1: Invited Color by Blue - A New Method of Achieving Full Color for Inorganic EL

X. Wu, A. Nakua, D. Cheong
iFire Tech., Canada

14:20

PH3 - 2: Invited GaN Phosphors and Black-Thick-Dielectric Electroluminescent Displays

J. Heikenfeld, A. J. Steckl*
Extreme Photonix, USA
*Univ. of Cincinnati, USA
14:50
PH3 - 3
Improvement in Reproducibility of Bluish-Green Ce³⁺
Luminescence by H₂O Supply in Electron-Beam
Evaporated SrS:Ce Thin Film Electroluminescent Devices
K. Takasu, S. Usui, H. Oka, K. Ohmi, S. Tanaka,
H. Kobayashi
Tottori Univ., Japan

15:10
PH3 - 4
Structural and Luminescent Characteristics of
(Sr₁₋ₓCaₓ)S:Cu,F TFEL Devices
M. Ehara, S. Hakamata, H. Fukada, H. Kominami,
Y. Nakanishi, Y. Hatanaka*
Shizuoka Univ., Japan
*Aichi Univ. of Tech., Japan

- - Break - -

15:40 - 17:00 Room 501

PH4: LEDs & Phosphors

Chair: H. Yamamoto, Tokyo Univ. of Tech., Japan
Co-Chair: J. Heikenfeld, Extreme Photonix, USA

15:40
PH4 - 1: Invited Technologies for High-Efficiency Light-Emitting Diodes
G. Hatakoshi
Toshiba Res. Consulting, Japan

16:10
PH4 - 2 Red, Green and Blue Oxide Phosphor Thin Films Prepared
by Pulsed Laser Deposition Technique
T. Ishisaka, T. Kunimoto*, M. Mizuno, K. Ohmi, S. Tanaka,
H. Kobayashi
Tottori Univ., Japan
*Sumitomo Chem., Japan

16:30
PH4 - 3: Invited Phosphors for UV LED: White Light Emitting Devices
A. M. Srivastava
General Elec., USA

Author Interviews
17:00-18:00

Sponsors:
The 125th Research Committee on Mutual Conversion between Light and Electricity, JSPS
Phosphor Research Society, ECSJ
## Workshop on Field Emission Display

**Friday, December 5**

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<td>9:00</td>
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<td><strong>FED1: FEDs</strong></td>
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<tr>
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<td>Chair: J. Ishikawa, Kyoto Univ., Japan</td>
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<td>Co-Chair: K. Shibayama, Mitsubishi Elec., Japan</td>
</tr>
<tr>
<td>9:10</td>
<td><strong>FED1 - 1:</strong> Invited Low Temperature CNT FED</td>
</tr>
<tr>
<td></td>
<td>J.-J. Kim, S. Kang, A. Chang, W. Son, C. Bae, J. Yi, M. Kim,</td>
</tr>
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<td></td>
<td>S. Yoon, C. R. Lee</td>
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<tr>
<td></td>
<td>cDream, USA</td>
</tr>
<tr>
<td>9:35</td>
<td><strong>FED1 - 2:</strong> CNT Field Emission Video Display</td>
</tr>
<tr>
<td></td>
<td>L. H. Thuesen, D. S. Mao, V. Ginsberg, M. Yang, Y. J. Li, R. L. Fink,</td>
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<td></td>
<td>Z. Yaniv</td>
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<td>Appl. Nanotech, USA</td>
</tr>
<tr>
<td>9:50</td>
<td><strong>FED1 - 3:</strong> 8-in. QVGA CNT FED of Normal Triode Structure</td>
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<tr>
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<td>Liao, C.-S. Chao, S.-C. Jiang, J.-C. Ho, S.-M. Huang, Y.-X. Chen,</td>
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<td></td>
<td>H.-C. Cheng, Y.-J. Shiau, W.-K. Huang, L.-Y. Chiang, C.-C. Lee</td>
</tr>
<tr>
<td></td>
<td>ERSO/ITRI, Taiwan</td>
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<tr>
<td>10:05</td>
<td><strong>FED1 - 4:</strong> Development of 7.6-in. Diagonal Full Color Ballistic</td>
</tr>
<tr>
<td></td>
<td>Electron Surface-Emitting Display on PDP-Grade Glass Substrate</td>
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<tr>
<td></td>
<td>T. Ichihara, Y. Honda, T. Hatai, T. Baba, Y. Takegawa, Y. Watabe,</td>
</tr>
<tr>
<td></td>
<td>K. Aizawa, T. Komoda, V. Vezin*, N. Koshida*</td>
</tr>
<tr>
<td></td>
<td>Matsushita Elec. Works, Japan*</td>
</tr>
<tr>
<td></td>
<td>*Tokyo Univ. of A&amp;T, Japan</td>
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- - Break - -
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<th>Time</th>
<th>Session</th>
<th>Title</th>
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<tr>
<td>10:35</td>
<td>FED2 - 1</td>
<td>Field Emission Electron Source by Using Graphite Nano-Structure</td>
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<tr>
<td>10:35</td>
<td>FED2 - 1</td>
<td>T. Matsumoto, H. Mimura*</td>
</tr>
<tr>
<td>10:35</td>
<td>FED2 - 1</td>
<td>Stanley Elec., Japan</td>
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<tr>
<td>10:35</td>
<td>FED2 - 1</td>
<td>Shizuoka Univ., Japan</td>
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<td>10:50</td>
<td>FED2 - 2</td>
<td>Effect of Laser Irradiation on CNT-Cathodes in Different Atmospheres</td>
</tr>
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<td>10:50</td>
<td>FED2 - 2</td>
<td>W. Rochanachirapar, Y. Kanazawa, W. J. Zhao, M. Takai</td>
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<td>10:50</td>
<td>FED2 - 2</td>
<td>Osaka Univ., Japan</td>
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<tr>
<td>11:05</td>
<td>FED2 - 3</td>
<td>Comparison of Field Emission Characteristics of Transition Metal Nitrides and Carbides</td>
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<tr>
<td>11:05</td>
<td>FED2 - 3</td>
<td>Kyoto Univ., Japan</td>
</tr>
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<td>11:20</td>
<td>FED2 - 4</td>
<td>Electron Field Emission from Boron Nitride Nanofilm Synthesized by Plasma-Assisted CVD</td>
</tr>
<tr>
<td>11:20</td>
<td>FED2 - 4</td>
<td>S. Funakawa, H. T. Luo, C. Kimura, T. Sugino</td>
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<tr>
<td>11:20</td>
<td>FED2 - 4</td>
<td>Osaka Univ., Japan</td>
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<tr>
<td>11:35</td>
<td>FED2 - 5</td>
<td>Fabrication of Thermal Field Emitter by Using Yttrium Oxide</td>
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<tr>
<td>11:35</td>
<td>FED2 - 5</td>
<td>T. Kawakubo, Y. Saito*, N. Miyamoto, H. Nakane, H. Adachi</td>
</tr>
<tr>
<td>11:35</td>
<td>FED2 - 5</td>
<td>Muroran Inst. of Tech., Japan</td>
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<tr>
<td>11:35</td>
<td>FED2 - 5</td>
<td>Tohken, Japan</td>
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--- Lunch ---

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<thead>
<tr>
<th>Time</th>
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<th>Title</th>
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<tr>
<td>14:05</td>
<td>FED3 - 1</td>
<td>Fabrication of Advanced Transfer Metal Mold FEA</td>
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<tr>
<td>14:05</td>
<td>FED3 - 1</td>
<td>M. Nakamoto, K. Fukuda, M. Higa</td>
</tr>
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<td>14:05</td>
<td>FED3 - 1</td>
<td>Toshiba, Japan</td>
</tr>
<tr>
<td>14:20</td>
<td>FED3 - 2</td>
<td>Fabrication of Electron Source for FED Using CNT Grown by Thermal CVD</td>
</tr>
<tr>
<td>14:20</td>
<td>FED3 - 2</td>
<td>Mitsubishi Elec., Japan</td>
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14:35  
**FED3 - 3**  
Gated Cold Cathode Array with Carbonic Nano-Pillars Formed by O$_2$ RIE for FED Application  
T. Yoshida, A. Baba, T. Asano  
Kyushu Inst. of Tech., Japan

14:50  
**FED3 - 4**  
Optimization of FEA Fabricated by Using Beam Assisted Process  
K. Murakami, N. Yamasaki, W. Jarupoonphol, Y. Tate, M. Takai  
Osaka Univ., Japan  
- - Break - -

**15:20 - 17:00**  
Room 411+412  
**FED4: FED Fabrication Technologies**

**Chair:** J.-J. Kim, cDream, USA  
**Co-Chair:** M. Nakamoto, Toshiba, Japan

**15:20  FED4 - 1:**  
Invited Improvement of Pixel Uniformity in CNT Lighting Tubes Used for Large-Scale Tiled Displays  
Mitsubishi Elec., Japan  
*Osaka Univ., Japan

**15:45  FED4 - 2**  
Feasibility Study on Graphite Nanofiber FED  
NHK, Japan  
*ULVAC, Japan  
**ULVAC Coating, Japan

**16:00  FED4 - 3**  
Fabrication of Triode Structure Graphite Nanofiber FED  
ULVAC, Japan  
*ULVAC Coating, Japan  
**NHK, Japan

**16:15  FED4 - 4**  
Active-Matrix CNT FED Driven by LTPS-TFT  
ERSO/ITRI, Taiwan
16:30
FED4 - 5
Novel Tetrode Structure for FEDs Using CNT
H. T. Chun, H. Jeong*, W. S. Seo, J. W. Park, N. J. Koh,
D. J. Lee*, D. G. Lee*
LG.Philips Displays, Korea
*Kumoh Nat. Inst. of Tech., Korea

16:45
FED4 - 6
2-in. CNT FED Fabricated by Using Screen Printing
Method and Vacuum In-Line Sealing Technology
S. J. Kwon, T. H. Kim, B. K. Shon, E. S. Cho*, J. D. Lee*,
H. S. Uh**, S. H. Cho***, C. G. Lee***
Kyung-Won Univ., Korea
*Seoul Nat. Univ., Korea
**Sejong Univ., Korea
***Samsung SDI, Korea

Author Interviews
17:00 - 18:00

Sponsors:
158th Committee on Vacuum Nanoelectronics, JSPS
'03 Asian Vacuum Microelectronics Conference

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due October 2, 2003
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A4- or US letter-sized pages, reflecting
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Annecy Aoyama, 2F
2-6-12, Minami-Aoyama, Minato-ku
Tokyo 107-0062, Japan
Phone +81-3-3423-4180
Fax +81-3-3423-4108
http://idw.ee.uec.ac.jp/
Workshop on Organic EL Displays

Wednesday, December 3

10:40 - 12:05 Room 409+410

OEL1: Materials

Chair: T. Tsutsui, Kyushu Univ., Japan
Co-Chair: J. Kido, Yamagata Univ., Japan

10:40
OEL1 - 1:
Invited Recent Progress of New Light-Emitting Polymers
S. Doi, C. Sekine, Y. Tsubata, M. Ueda, T. Noguchi, T. Ohnishi
Sumitomo Chem., Japan

11:00
OEL1 - 2:
Invited Exciton Annihilation at High Current Density in Organic Light Emitting Diodes
C. Adachi*,**, Y. Kawamura*,**, H. Yamamoto*
*Chitose Inst. of Sci. & Tech., Japan
**Japan Sci. & Tech., Japan

11:20
OEL1 - 3
High Efficiency, Long-Lived Electrophosphorescent OLEDs for Both Active and Passive Matrix Displays
R. C. Kwong, Y.-J. Tung, J. Brooks, M. S. Weaver, V. Adamovich, M. R. Nugent, J. J. Brown
Universal Display, USA

11:35
OEL1 - 4
Novel Host and Blocking Materials for Efficient and Stable Phosphorescent OLED Devices
Covion Organic Semiconductors, Germany

11:50
OEL1 - 5
Efficient Organic EL Devices with New Electron Transport Materials
K. Fukuoka, M. Matsuura, M. Funahashi, H. Yamamoto, C. Hosokawa
Idemitsu Kosan, Japan

- - Lunch - -

BANQUET

Wednesday, December 3
18:40 – 20:30
Hotel Okura Fukuoka

See page 6 for details
# OEL2: Devices (1)

**Chair:** H. Murata, JAIST, Japan  
**Co-Chair:** H. Takahashi, Sanyo Elec., Japan

### 13:50
**OEL2 - 1:** Invited Multiphoton Emission OLED: Structure and Property  
*T. Matsumoto, T. Nakada, J. Endoh, K. Mori, N. Kawamura, A. Yokoi, J. Kido*  
IMES, Japan  
*Yamagata Univ., Japan*

### 14:10
**OEL2 - 2:** Invited Flexible OLED Display Using Plastic Substrate  
Pioneer, Japan

### 14:30
**OEL2 - 3**  
High Efficiency White-Light-Emitting Organic Electroluminescent Devices Based on New Color-Mixing Techniques  
*A. Mikami, A. Okada, T. Tsubokawa*  
Kanazawa Inst. of Tech., Japan

### 14:45
**OEL2 - 4**  
Improvement of the External Extraction Efficiency of Organic LED by Using Pyramid Array  
*N. Sone, Y. Kawakami*  
Stanley Elec., Japan

### 15:00
**OEL2 - 5**  
Status of OEL Display Production by OVPD and Scaling towards Next Generations  
*M. Schwambera, M. Gersdorff, M. Meyer, M. Reinhold, G. Strauch, M. Heuken, R. Beccard, T. McEntee*  
Aixtron, Germany

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# OEL3: Devices (2)

**Chair:** C. Adachi, Chitose Inst. of Sci. & Tech., Japan  
**Co-Chair:** M. Tsuchida, Pioneer, Japan

### 15:35
**OEL3 - 1:** Invited Flexible Color OLED Display Based on Phosphorescent Polymers  
*S. Tokito, M. Suzuki, T. Tsuzuki*  
NHK, Japan
15:55
OEL3 - 2: Invited Enhanced Stability of Organic Light-Emitting Diodes Doped with Fluorescent Dye
H. Murata
JAIST, Japan

16:15
OEL3 - 3: Current Heating and Temperature Dependence of Lifetime in PLEDs
M. Koden, Y. Fujita, S. Okazaki, S. Mitsui
Sharp, Japan

16:30
OEL3 - 4: Total Solution Process of Solution-Processed Organic Electroluminescent Devices with Low- Molecular-Weight Organic Molecules
M. Ooe, R. Satoh, T. Echigo, S. Naka, H. Okada, H. Onnagawa, T. Miyabayashi*,**, T. Inoue*,**
Toyama Univ., Japan
*Brother Inds., Japan
**Japan Sci. & Tech., Japan

16:45
OEL3 - 5: Polymeric Semiconductor Devices Having Pattern and Layer-by-Layer Structure Made by Spray Deposition
T. Ishikawa, M. Shakutsui, K. Fujita, T. Tsutsui
Kyushu Univ., Japan

Author Interviews
17:00 - 18:00

14:00 - 16:30 Poster/Al Room (Room 203+204)

Poster AMD/OELp: Active-Matrix OLED

AMD/OELp - 1 An Active Matrix OLED Display Employing an Improving Gray Scale Structure
AU Optronics, Taiwan

AMD/OELp - 2 AM-OLED Pixel Circuits Suitable for TFT Array Testing
Y. Sakaguchi, D. Nakano
IBM Res., Japan

AMD/OELp - 3 Design of a Novel 6-bit Current Data Driver System for AM-OLED
W.C. Hsueh, C.Y. Meng*, A. Shin, Y.M. Tsai
Toppoly Optoelect., Taiwan
*Nat. Taiwan Univ., Taiwan

AMD/OELp - 4 A Self-Compensated Voltage Programming Pixel Structure for Active-Matrix Organic Light Emitting Diodes
S. M. Choi, O. K. Kwon
Hanyang Univ., Korea
AMD/OELp - 5 A High Uniformity Voltage Programmed Active-Matrix OLED
J.-R. Shih, C.-R. Chen, C.-F. Chung, Y.-H. Yeh, J.-R. Lin,
C.-H. Liou, M.-D. Chen
ERSO/ITRI, Taiwan

AMD/OELp - 6 Apparatus for Improving Yields of Active-Matrix OLED Panels
C.-C. Kuo*,**, W.-T. Liao*, H.-R. Han*, Y.-H. Yeh***,
W.-C. Wang*
*Windell, Taiwan
**Nat. Chung Hsing Univ., Taiwan
***ERSO/ITRI, Taiwan

AMD/OELp - 7 Active-Matrix Organic Light Emitting Diode Drive Circuit
C.-C. Kuo*,**, H.-R. Han*, W.-T. Liao*, M.-D. Chen***,
W.-C. Wang*
*Windell, Taiwan
**Nat. Chung Hsing Univ., Taiwan
***ERSO/ITRI, Taiwan

AMD/OELp - 8 A New Poly-Si TFT Based AM-OLED Driving Method with both Amplitude and Pulse Width Modulation
J. Y. Jeong, J. Kim
Univ. of Suwon, Korea

AMD/OELp - 9 Development of IR Drop Simulator for AM-OLED
J. H. Lee, N. Komiya
Samsung SDI, Korea

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Thursday, December 4

9:00 - 10:25 Main Hall

AMD3/OEL4: AM-OLED (1)

Chair: K. Mameno, Sanyo Elec., Japan
Co-Chair: R. Hattori, Univ. of Tokyo, Japan

9:00 AMD3/OEL4 - 1: Invited Technological Challenge toward AM-OLED TV
T. Urabe
Sony, Japan

9:25 AMD3/OEL4 - 2 Pixel Circuit for a-Si AM-OLED
S. Ono, Y. Kobayashi, K. Miwa, T. Tsujimura
IDTech, Japan

9:45 AMD3/OEL4 - 3 A Uniform 10-in. Color Active-Matrix OLED with New Pixel Driving Circuit
Y.-H. Yeh, J.-R. Shih, C.-R. Chen, Y.-H. Kuo, Y.-L. Liu,
C.-C. Chen, C.-F. Chung, C.-C. Chen, C.-Y. Hung,
H.-Y. Tseng, T.-H. Chen, M.-D. Chen
ERSO/ITRI, Taiwan
10:05 AMD3/OEL4 - 4 Optimization of a Time Ratio Gray Scale Method for OLED Display
Seiko Epson, Japan

- - Break - -

10:40 - 12:05 Main Hall

AMD4/OEL5: AM-OLED (2)

Chair: T. Urabe, Sony, Japan
Co-Chair: H. Hamada, Sanyo Elec., Japan

10:40 AMD4/OEL5 - 1: Invited High-Resolution AM-OLED Display Using White Emitter and Color Filter Array
Sanyo Elec., Japan

11:05 AMD4/OEL5 - 2 A New 6-bit Digital-Type Current Driven Structure of OLED Display
AU Optronics, Taiwan

11:25 AMD4/OEL5 - 3 Comparison of Vth Compensation Ability Among Voltage Programming Circuits for AM-OLED Panels
Samsung SDI, Korea
*Hanyang Univ., Korea

11:45 AMD4/OEL5 - 4 5-TFT Pixel Circuit Design For Active-Matrix Organic Light Emitting Diode Compensating Non-Uniformity of Poly-Si TFTs and OLEDs
Seoul Nat. Univ., Korea

Author Interviews
17:00 - 18:00

14:00 - 16:30 Poster/Al Room (Room 203+204)

Poster OELp: OEL Materials & Devices

OELp - 1 Organic EL Devices Using New Iridium Complexes with Polymerizable Functional Group as One of the Ligands
X. Wang, K. Ogino, K. Tanaka, H. Usui
Tokyo Univ. of A&T, Japan
OELp - 2 Boron Compounds as Blue Emitting Materials for OLED
H. H. Rho, M. K. Choi, Y. K. Ha
Hongik Univ., Korea

OELp - 3 Preparation of Novel Red Light-Emitting Materials Based on a 2,1,3-Benzothiadiazole Unit and their Application to Organic Electroluminescent Devices
Kyushu Univ., Japan

OELp - 4 Characterization of New Red Dopants for Red Color OLED
H. H. Sung, I. H. Kim, K. N. Byun*, M. S. Jang*, H. S. Yoo*
KETI, Korea
*SKC, Korea

OELp - 5 Structural Effect of BAIlqs on the EL Performance of Phosphorescent Organic Electroluminescent Devices
Nat. Chiao Tung Univ., Taiwan

OELp - 6 High Electron Mobility Triazine Derivative
Kyushu Univ., Japan
*Canon, Japan

OELp - 7 Analysis of the Deterioration Mechanism of Fluorescence OLED
R. Kamoto, T. Matsunobe*, M. Ichikawa**, Y. Taniguchi**
Micro Analysis Lab., Japan
*Toray Res. Ctr., Japan
**Shinshu Univ., Japan

OELp - 8 Analysis on Permeation Properties of Thin Composite Film to Adopt the Passivation Layer of OLED
*KIST, Korea
**Kyung Hee Univ., Korea
***KETI, Korea

OELp - 9 Thin-Film Passivation for Longevity of Organic Light-Emitting Devices
ETRI, Korea

OELp - 10 Integrated I-V-B Measurement System for Measuring Characteristics of PMOLED Panels
C. J. Juan*,**, M. J. Tsai**, S. W. Hong*,**
*Hwa Hsia College of Tech. & Commerce, Taiwan
**Nat. Taiwan Univ. of Sci. & Tech., Taiwan
OELp - 11 2.1-in. Passive Matrix ECR(Enhanced Contrast Ratio) 
OLED Using Black Layer Technology
S. J. Kang, B. G. Roh, S. W. Kim, J. I. Kang, H. B. Jun, 
J. Y. E, K. S. Lee, H. S. Kim, H. E. Kim, Y. C. Cha, W. Y. Kim* 
Hyundai LCD, Korea
*Luxell Tech., Canada

OELp - 12 The Use of Hybrid Drives in Reducing Power 
Consumption of Organic EL Passive Matrix Panels
H. Ochi, S. Ishizuka, M. Tsuchida 
Pioneer, Japan

OELp - 13 Device Simulation of Multilayer Organic Light Emitting 
Diodes
Hongik Univ., Korea

OELp - 14 Effect of ITO Surface Morphology to the Luminescent 
Property of the Thin Film OLED
Y. Fukushi, H. Kominami, Y. Nakanishi, Y. Hatanaka* 
Shizuoka Univ., Japan
*Aichi Univ. of Tech., Japan

IDW Tutorial in Japanese
Tuesday, December 2 
Room 502 + 503, 
Fukuoka International Congress Center

Detail information will be sent 
by E-mail in October.

Contact address: 
idw-tutorial@ml.labs.fujitsu.com

11th Color Imaging Conference
November 4-7, 2003 
Scottsdale, AZ, USA

http://www.imaging.org/conferences/cic11/
# Workshop on 3D/Hyper-Realistic Displays and Systems

**Wednesday, December 3**

## 3D1: 3D Displays (1)

### Chair:
J.-Y. Son, Hanyang Univ., Korea

### Co-Chair:
M. Okui, NHK, Japan

#### 10:40

**3D1 - 1: Invited Mission and Practical Approaches of the "Consortium for 3-D Image Business Promotion"**

T. Honda*, **
*Consortium for 3-D Image Business Promotion, Japan
**Chiba Univ., Japan

#### 11:10

**3D1 - 2: Invited 2D/3D Electronically Switchable Displays**


Sharp Labs. of Europe, UK

*Sharp, Japan

#### 11:40

**3D1 - 3 Recent Development of 3-D Displays Using LCD Technologies**

Y. Funazou*, **, S. Takemoto*, K. Mashitani*, G. Hamagishi*

*Sanyo Elec., Japan
**Nara Inst. of Sci. & Tech., Japan

--Lunch--

## 3D2: 3D Displays (2)

### Chair:
I. Yuyama, Utsunomiya Univ., Japan

### Co-Chair:
Y. Komiya, Olympus Optical, Japan

#### 13:50

**3D2 - 1: Invited Projection Type Multiview Autostereoscopic Display with Single Projection Lens**

S. S. Kim, A. S. Shestak, K. H. Cha

Samsung Elect., Korea

#### 14:20

**3D2 - 2: Moire Pattern Reduction in Full-Parallax Autostereoscopic Imaging Systems Using Two Crossed Lenticular Plates as a Viewing Zone Forming Optics**

J.-Y. Son, V. Saveljev, S.-H. Shin, Y.-J. Choi, S.-S. Kim*

Hanyang Univ., Korea

*Samsung Elect., Korea
### Wednesday December 3

<table>
<thead>
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>14:40</td>
<td>3D2 - 3</td>
<td>Natural 3D Display which Generates High-Density Directional Images and Human Accommodation Responses</td>
<td>Y. Takaki, T. Fukutomi Tokyo Univ. of A&amp;T, Japan</td>
</tr>
<tr>
<td>15:00</td>
<td>3D2 - 4</td>
<td>Luminance Additivity in Compact Depth-Fused-3D Display Using a Stack of Two TN-LCDs</td>
<td>M. Date, H. Takada, S. Suyama, K. Nakazawa NTT, Japan</td>
</tr>
</tbody>
</table>

**- - Break - -**

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<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>16:00</td>
<td>3D3 - 2</td>
<td>Offset Block Matching for Ray Space Interpolation</td>
<td>M. Panahpour Tehrani, T. Fujii, M. Tanimoto Nagoya Univ., Japan</td>
</tr>
<tr>
<td>16:20</td>
<td>3D3 - 3</td>
<td>Fast Ray-Space Interpolation for Multi-View Video</td>
<td>P. Na Bangchang, T. Fujii, M. Tanimoto Nagoya Univ., Japan</td>
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<tr>
<td>16:40</td>
<td>3D3 - 4</td>
<td>CGH Generation Using the Depth Camera</td>
<td>H. Kang, C. Ahn, S. Lee, S. Lee* ETRI, Korea *Kwangwoon Univ., Korea</td>
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**Author Interviews**

17:00 - 18:00
<table>
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<tr>
<th>Time</th>
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<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tr>
<td>9:30 - 12:00</td>
<td>Poster/AI Room (Room 203+204)</td>
<td><strong>3Dp: 3D Displays &amp; Related Technologies</strong></td>
<td></td>
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<tr>
<td>3Dp - 1</td>
<td></td>
<td>Three Dimensional Display for User Interface in Free Viewpoint Television System</td>
<td>T. Higashi, T. Fujii, M. Tanimoto</td>
<td>Nagoya Univ., Japan</td>
</tr>
<tr>
<td>3Dp - 3</td>
<td></td>
<td>A New Method of Designing Double Lenticular Screen for Large Rear Projection 3-D Displays</td>
<td>C. Yamada, H. Isono</td>
<td>Nippon Inst. of Tech., Japan</td>
</tr>
<tr>
<td>3Dp - 4</td>
<td></td>
<td>Real-Time Measurement of the Position of a Viewer Watching a Stereoscopic LED Display with a Parallax Barrier</td>
<td>S. Matsumoto, H. Yamamoto, Y. Hayasaki, N. Nishida</td>
<td>Univ. of Tokushima, Japan</td>
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<td></td>
<td></td>
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<td>*Nichia, Japan</td>
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<tr>
<td>3Dp - 6</td>
<td></td>
<td>Integral Photography (IP) Using Variable Focusing Lens Array (VFLA) for Enhanced Integral Image Depth</td>
<td>Y. S. Hwang, T. H. Yoon, J. C. Kim</td>
<td>Pusan Nat. Univ., Korea</td>
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<td>*Samsung Elect., Korea</td>
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<tr>
<td>3Dp - 8</td>
<td></td>
<td>A Real-Time Three Dimensional Animation System by Electro Holography with a Special-Purpose Chip for Holography and a High Minute Reflective LCD</td>
<td>T. Shimobaba, K. Godo*, S. Hishinuma*, M. Horiuchi*, T. Ito*,**</td>
<td>RIKEN, Japan</td>
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<td>*Chiba Univ., Japan</td>
<td>**Japan Sci. &amp; Tech., Japan</td>
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</table>

**Supporting Organizations:**
Special Technical Group on 3D Image Information, ITE
Technical Group on Artistic Image Technology, ITE
### Workshop on Applied Vision and Human Factors

**Thursday, December 4**

**14:00 - 16:30**  
**Poster/Al Room (Room 203+204)**

**Poster**  
**VHFp: Image Quality & Processing**

| VHFp - 1 | Image Inclination Measurement by Evaluating Pairs of Edge Directions  
| H. Oomi, F. Saitoh  
| Gifu Univ., Japan |
|---|---|
| VHFp - 2 | Adaptive Contrast Improvement Method for Color Image Using Genetic Algorithm  
| T. Urata, F. Saitoh  
| Gifu Univ., Japan |
|---|---|
| VHFp - 3 | Super-Resolution Color Array Display Based on Pixel Reorganization  
| Y. Zhang, B. M. Zhang  
| Nanjing Univ. of Sci. & Tech., China |
|---|---|
| VHFp - 4 | Effect of the Background Luminance on Just Noticeable Difference (JND) Contrast of “Mura” in LCDs  
| T. Tamura, M. Baba, T. Furuhata  
| Tokyo Polytech. Univ., Japan |
|---|---|
| VHFp - 5 | Empirical Evaluation Method of Overall Picture Quality Improved by Weighting Factors on an LCD  
| T. Ozawa, Y. Shimodaira, G. Ohashi  
| Shizuoka Univ., Japan |
|---|---|
| VHFp - 6 | Improvement of Moving Picture Quality in TFT-LCD with Blinking Backlight Unit and Overdriving  
| D. S. Park, J. M. Han, K. W. Bae, S. Y. Kim, Y. H. Kim, Y. J. Lim  
| BOE Hyundai Display Tech., Korea |

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**ASID 2003**

The 8th Asian Symposium on Information Display

February 14 – 17, 2004  
Nanjing Jiangsu, China  
http://asid03.seu.edu.cn/
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Room</th>
<th>Chair</th>
<th>Co-Chair</th>
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<tbody>
<tr>
<td>9:25-9:30</td>
<td>Opening</td>
<td>413+414</td>
<td>H. Isono, Workshop Chair</td>
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<tr>
<td>9:25</td>
<td>Opening Remarks</td>
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<td>H. Isono, Workshop Chair</td>
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<tr>
<td>9:30-10:40</td>
<td>VHF1: Display Measurement &amp; Image Quality (1)</td>
<td>413+414</td>
<td>H. Isono, Nippon Inst. of Tech., Japan</td>
<td>T. Kurita, NHK, Japan</td>
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<tr>
<td>9:30</td>
<td>VHF1 - 1: Invited Review of Ergonomic Standards for Displays</td>
<td>413+414</td>
<td>S. Fukuzumi, Y. Nakano*, R. Yoshitake**</td>
<td>NEC, Japan</td>
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<td>*Oki Elec. Ind., Japan</td>
<td>**IBM Japan, Japan</td>
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<tr>
<td>10:00</td>
<td>VHF1 - 2: Mura Analysis Method by Using JND Luminance and the SEMU Definition</td>
<td>413+414</td>
<td>D.-G. Lee, I.-H. Kim, M. C. Jeong, B. K. Oh, W. Y. Kim</td>
<td>LG.Philips LCD, Korea</td>
</tr>
<tr>
<td>10:20</td>
<td>VHF1 - 3: An Ergonomic Approach to Evaluate Screen Quality on LCDs</td>
<td>413+414</td>
<td>K. Moriguchi, R. Yoshitake, Y. Mori*</td>
<td>IBM Japan, Japan</td>
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<td>*IDTech, Japan</td>
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<tr>
<td>11:00-12:00</td>
<td>VHF2: Display Measurement &amp; Image Quality (2)</td>
<td>413+414</td>
<td>J. L. Bergquist, Nokia Japan, Japan</td>
<td>T. Kurita, NHK, Japan</td>
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<tr>
<td>11:00</td>
<td>VHF2 - 1: Relation between Measured Spot Profile and Perceived Sharpness</td>
<td>413+414</td>
<td>J. Xia, Y. X. Liu, I. Heynderickx*, H. C. Yin</td>
<td>Southeast Univ., China</td>
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<td>*Philips Res. Labs., The Netherlands</td>
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</tr>
</tbody>
</table>
Proposal of Lightness Level and Threshold Conditions of Perceptive Parameter, "Motion Picture Response Time (MPRT)"

Mitsubishi Elec., Japan
*Hitachi Displays, Japan
**Hitachi, Japan
***Sony, Japan
****Eizo Nanao, Japan
*****NHK, Japan

Development of Accurate and Reliable System for Motion Picture Quality Analysis

K. Oka, Y. Enami
Otsuka Elect., Japan

- - Lunch - -
VHF4: Color & Tone Reproduction

Chair: Y. Shimodaira, Shizuoka Univ., Japan
Co-Chair: S. Clippingdale, NHK, Japan

15:50
VHF4 - 1: Invited Wide Color Gamut Displays - New Phosphor CRT and LED Backlighting LCD -
*NEC-Mitsubishi Elec. Visual Syss., Japan

16:20
VHF4 - 2: Analysis and Experiments of LC Inversion Driving and Frame Rate Control of Graphic Adapter
M. Tsuchihashi, R. Kataoka, K. Inoue, M. Kobayashi IBM Japan, Japan

16:40
VHF4 - 3: Another Clarification of “Gamma” for Human Visual System
H. Sasaki, T. Taguchi Toshiba, Japan

Author Interviews
17:00 - 18:00

Late-News Papers
due October 2, 2003
Submit a two-page Camera-ready manuscript of A4- or US letter-sized pages, reflecting important new findings or developments to:

IDW ’03 Secretariat
c/o The Convention
Annecy Aoyama, 2F
2-6-12, Minami-Aoyama, Minato-ku
Tokyo 107-0062, Japan
Phone +81-3-3423-4180
Fax +81-3-3423-4108
http://idw.ee.uec.ac.jp/
Workshop on Projection and Large-Area Displays, and Their Components

Wednesday, December 3

14:00 - 16:30 Poster/Al Room (Room 203+204)

Poster  LADp: Light Valve Technology

LADp - 1  Light Leakage Effects and Light Shielding Design on 3-in. XGA LTPS Projection Displays
C.-H. Tsai, C.-C. Chen, C.-Y. Huang, C.-C. Chiang, Y.-H. Yeh, T.-Y. Sheu
ERSO, Taiwan

Thursday, December 4

9:00 - 10:20 Room 413+414

LAD1: Imaging & Light Valve Technology

Chair: D. S. Kim, Samsung Elect., Korea
Co-Chair: K. Ohhara, Ti Japan, Japan

9:00  LAD1 - 1  WXGA LCOS Projection Panel with Vertically Aligned Nematic LC
D. Cuypers, J. Van Den Steen, G. Van Doorselaer, H. De Smet*, A. Van Calster*
IMEC, Belgium
*Ghent Univ., Belgium

9:20  LAD1 - 2  Driving Circuit Technology of LCOS for HDTV
T. Maeda, I. Takemoto, K. Shibata, H. Nakagawa
Hitachi Displays, Japan

9:40  LAD1 - 3  Development of a New Video Image Improvement LSI for the Digital Cinema LCD Projector
A. Maenaka*, R. Amano*, T. Iinuma*,**, H. Murata*, A. Mishima*, H. Kitagishi*
*Sanyo Elec., Japan
**Nara Inst. of Sci. & Tech.

10:00  LAD1 - 4  A Novel Projection System Based on an Adaptive Dynamic Range Control Concept
H. Iisaka, T. Toyooka, S. Yoshida, M. Nagata
Seiko Epson, Japan

- - Break - -
LAD2: Optics & Illumination Components

10:40 - 12:05 Room 413+414

10:40 LAD2 - 1: Invited Optical Model of DMD Device in DLP Projection System
S. Dewald, A. Iyengar
Texas Instrs., USA

11:05 LAD2 - 2: High Efficiency Illuminating System for Projector
K. Nishida, H. Yanagisawa
Seiko Epson, Japan

11:25 LAD2 - 3: High Efficiency Reflectors for Light Sources of Projection Systems
T. Tsutsumi, S. Tamaru, K. Maruyama, T. Ogura
Matsushita Elec. Ind., Japan

11:45 LAD2 - 4: High Contrast Front Projection Display System Optimizing the Projected Light Angle Range
B. Katagiri, T. Ishinabe, T. Uchida, T. Miyashita
Tohoku Univ., Japan

13:50 - 15:15 Room 413+414

LAD3: Color Sequential Technology

13:50 LAD3 - 1: Invited Simplified Projection TV Optics Using DMD
Y. Masumoto, M. Wada, Y. Fushimi
Matsushita Elec. Ind., Japan

14:15 LAD3 - 2: A High-Resolution LCOS Imager for Single Panel HDTV Systems
W. Sloof, M. S. Brennesholtz
Philips LCOS Microdisplay Syss., USA

14:35 LAD3 - 3: Single LCOS Projection System by Using MCSD Technology
D.-S. Kim, K. H. Cho, S. H. Kim, H.-J. Lee,
M. S. Brennesholtz*
Samsung Elect., Korea
*Philips LCOS Microdisplay Syss., USA
LAD3 - 4 Performance of High Power LED Illuminators in Color Sequential Projection Displays
G. Harbers, M. Keuper, S. Paolini
Lumileds Lighting, USA

- - Break - -

15:35 - 17:00 Room 413+414

LAD4: Advanced System

Chair: G. Harbers, Lumileds Lighting, USA
Co-Chair: H. Nakano, Barco, Japan

15:35 LAD4 - 1: Invited Development of a New HD LCD Projector for Digital Cinema
H. Yamamoto, K. Terada, M. Tahara
Sanyo, Japan

16:00 LAD4 - 2 A New Projection System Based on the Light Scrolling Method for Motion Pictures
Sanyo Elec., Japan

16:20 LAD4 - 3 Wide Gamut Projection Displays with Complementary Colors
S. C. Tan, X. W. Sun
Nanyang Tech. Univ., Singapore

16:40 LAD4 - 4 High-Density Multi-Projection Display System
T. Koike, Y. Momoi, M. Oikawa, M. Yamasaki, H. Takeda
Hitachi, Japan

Author Interviews
17:00 - 18:00

Supporting Organizations:
Technical Group on Information Display, ITE
Technical Committee on Electronic Information Displays, Electronics Society, IEICE
Opto-electronic Materials and Devices Study Specialty Section, IEIJ
Liquid crystal display forum, JLCS
Topical Session on Electronic Paper

Wednesday, December 3

14:00 - 15:10 Main Hall

AMD2/EP1: Active-Matrix Electronic Paper

Chair: M. Omodani, Tokai Univ., Japan
Co-Chair: S. Utsunomiya, Seiko Epson, Japan

14:00 AMD2/EP1 - 1: Invited Driving Schemes for Active Matrix Electrophoretic Displays
G. F. Zhou, M. T. Johnson, R. Cortie, R. Zehner*, K. Amundson*, A. Knaian*, B. Zion*
Philips Res. Labs., The Netherlands
*E Ink, USA

SiPix Imaging, USA

14:50 AMD2/EP1 - 3 Printed Active Matrix Arrays for Electronic Paper Displays
Plastic Logic, UK

Author Interviews
17:00 - 18:00

Thursday, December 4

9:20 - 10:05 Room 409+410

EP2: Electronic Paper (1)

Chair: H. Arisawa, Fuji Xerox, Japan
Co-Chair: T. Fujisawa, Dainippon Ink & Chem., Japan

9:20 EP2 - 1: Invited Multi-Color Photochromism of TiO₂ Films Loaded with Silver Nanoparticles
Y. Ohko, T. Tatsuma*
Japan Sci. & Tech., Japan
*Univ. of Tokyo, Japan
9:45 EP2 - 2 Chemical Preparation of Twisting Balls for Electronic Paper
S. Maeda, S. Hayashi, K. Ichikawa*, K. Tanaka*, R. Ishikawa*, M. Omodani*
Oji Paper, Japan
*Tokai Univ., Japan

- - Break - -

10:40 - 11:40 EP3: Electronic Paper (2)

EP3 - 1 A New Insight in Electronic Paper: EPID or DEPID?
T. Bert*, H. De Smet*, **
*Ghent Univ., Belgium
**IMEC, Belgium

10:40

EP3 - 2 Preparation of Nylon Microcapsules Containing Superparamagnetite
T. Takada, T. Shoubara, K. Kenmochi, T. Hirai
Shinshu Univ., Japan

11:00

EP3 - 3 Film-Like Liquid Crystal Display
ITRI, Taiwan

Author Interviews
17:00 - 18:00

14:00 - 16:30 Poster/AI Room (Room 203+204)

Poster EPP: Electronic Paper Posters

EPP - 1 Multi-Color Electrophoretic Display Technique through Microcapsules
ETRI, Korea
*DPI Solution, Korea

EPP - 2 Flow of Liquid Crystal in Mobile Fine Particle Display (MFPD) Cells
M. Ogawa, T. Takahashi, S. Saito, K. Kobayashi*, T. Akahane*, Y. Toko**
Kogakuin Univ., Japan
*Nagaoka Univ. of Tech., Japan
**Stanley Elec., Japan
Evaluation of the Position where Electric Charges on a Ball Exist in Non-Aqueous Dielectric Liquids in Electrical Twisting Ball Displays

R. Ishikawa, M. Omodani, S. Maeda*
Tokai Univ., Japan
*Oji Paper, Japan

SID ’04
Society for Information Display
Symposium, Seminar & Exhibition

May 23 – 28, 2004
Seattle, WA, USA
http://www.sid.org

EVENING GET-TOGETHER WITH WINE

Tuesday, December 2
18:00 – 20:00
at the lobby in front of conference room 501,
Fukuoka International Congress Center

(Sponsored by Merck Ltd., Japan)
See page 6 for details

EXHIBITION

13:00 – 18:00 Wednesday, Dec. 3
10:00 – 18:00 Thursday, Dec. 4
10:00 – 13:30 Friday, Dec. 5

Room 201 + 202

Free admission with your registration name tag
IDW ’03 COMMITTEES

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- 3D WS: Y. Komiya Olympus Optical
- VHF WS: T. Kurita NHK
- LAD WS: H. Kikuchi NHK
- EP TS: S. Maeda Oji Paper

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T. Itoh - Corning Japan

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Ir. T. G. Spanjer - LG.Philips Displays, The Netherlands
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D. H. Pyun - Samsung SDI, Korea
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- S. Saito, Nat. Inst. of Ind. Health
- T. Wake, Chukyo Univ.
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- K. Terada, Sanyo Elec.
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- R. Igarashi, Ushio Elec.
- K. Matsumoto, Toppan Printing
- H. Nakano, Barco
- S. Shikama, Mitsubishi Elec.
- T. Okada, Matsushita Elec. Ind.
- T. Ogura, Matsushita Elec. Ind.
- K. Oohara, Texas Instrs. Japan
- K. Kaise, Sony
- Y. Kondou, Matsushita Elec. Works
- T. Hayashi, Sumitomo 3M

**Topical Session on Electronic Paper**

**Topical Session Chair:** M. Omodani, Tokai Univ.
**Program Chair:** S. Maeda, Oji Paper
**General Secretary:** H. Arisawa, Fuji Xerox
**Program Committee:**
- Y. Hotta, Ricoh

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- The Electrochemical Society of Japan (ECSJ)
- The Illuminating Engineering Institute of Japan
- The Imaging Society of Japan
- Information Processing Society of Japan
- The Institute of Electrical Engineers of Japan
- The Institute of Electronics, Information and Communication Engineers (IEICE)
- The Institute of Image Electronics Engineers of Japan
- Japan Ergonomics Society
- Japanese Liquid Crystal Society (JLCS)
- The Japan Society of Applied Physics
- The Japanese Society of Ophthalmological Optics
- The Virtual Reality Society of Japan

**Funds for the conference are furnished in part by the following organizations:**

- Support Center for Advanced Telecommunications Technology Research, Foundation
- The Ogasawara Foundation for the Promotion of Science & Engineering
- The Telecommunications Advancement Foundation
- Fukuoka Convention & Visitors Bureau

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5 F
Deck
Escalator
Lobby
Elevator

4 F
Escalator
Speakers
Prep. Rm.
Lobby
Terrace
Elevator
IDW ’04
The 11th International Display Workshops
December 8-10, 2004
Niigata, Japan

EVENING GET-TOGETHER WITH WINE
Tuesday, December 2
18:00 – 20:00
at the lobby in front of conference room 501,
Fukuoka International Congress Center
(Sponsored by Merck Ltd., Japan)
See page 6 for details

EXHIBITION
13:00 – 18:00 Wednesday, Dec. 3
10:00 – 18:00 Thursday, Dec. 4
10:00 – 13:30 Friday, Dec. 5
Room 201 + 202
Free admission with your registration name tag