

ADVANCE PROGRAM

2010 SID INTERNATIONAL SYMPOSIUM

May 25–28, 2010 (Tuesday – Friday)
Washington State Convention Center
Seattle, Washington USA

Session 1: Annual SID Business Meeting
Tuesday, May 25 / 8:00 – 8:20 am / Ballroom 6E

Session 2: Opening Remarks / Keynote Addresses
Tuesday, May 25 / 8:20 – 10:20 am / Ballroom 6E

- 2.1: **The Next Big Thing in Displays**
Sang Soo Kim, Samsung Mobile Display, Yongin-City, Korea
- 2.2: **Information Displays in Aerospace: Past, Present, and Future**
Mike Sinnett, The Boeing Company, Seattle, WA, USA
- 2.3: **Breaking the Fourth Wall: The Next Generation of Interactive Displays**
Steven Bathiche, Microsoft, Redmond, WA, USA

Session 3: Polarization-Based Stereoscopic Projection Displays (3-D / Projection)
Tuesday, May 25 / 10:50 am – 12:40 pm / Ballroom 6B

Chair: Alan Sobel, Flatscreen Technologies Corp.

Co-Chair: Sergei Yakovenko, LensVector, Inc.

- 3.1: **A Novel Design of a Stereoscopic 3-D Display with a Patterned Retarder**
Hoon Kang, LG Display Co., Paju-si, Korea
- 3.2: **A New Approach to Dynamic Polarization 3-D LCD**
Hsiang Tan Lin, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan
- 3.3: **Efficient Polarization-Based Stereoscopic Projector with Extended Color Gamut: Combining Two Projectors into One**
Lawrence Bogaert, Vrije Universiteit Brussel, Brussels, Belgium
- 3.4: **Simultaneous Projection of Stereoscopic 3-D Left- and Right-Eye Images in Orthogonal Polarization through a Single Lens**
Simon Boothroyd, Thetalili, Inc., Ottawa, Ontario, Canada
- 3.5: **Novel Broadband Retarder Evaluation Metrics for 3-D Projection Display**
Yu-Hsiun Chang, National Taiwan University, Taipei, Taiwan
- 3.6: **Late-News Paper: High Transmission and High Contrast PBS for Mobile Projection Applications**
Seong Taek Lee, 3M Innovation Singapore Pte Ltd, , Singapore

Session 4: Active-Matrix Integration (Active-Matrix Devices)

Tuesday, May 25 / 10:50 am – 12:00 pm / Ballroom 6C

Chair: Roger G. Stewart, Sourland Mountain Associates

- 4.1: **A Novel a-Si Gate Driver with Enhanced Driving Capability**
Chien-Hsueh Chiang, Innolux Display Co., Miaoli, Taiwan
- 4.2: **A Low-Power-Consumption and High-Reliability Architecture for a-Si TFT Gate Driver on Glass**
Masahiko Nakamizo, Sharp Corp., Mie, Japan
- 4.3: **An Ultra-Slim-Border TFT-LCD Technology Using Gate Fan-Out in the Active Area**
Jie-Chang Tu, InnoLux Display Corp., Miaoli, Taiwan
- 4.4: **Late-News Paper: A Novel High Reliable Integrated Gate Driver Circuit with Bi-Scanning Structure using a-Si TFT for Large Size and High Speed FHD LCD TVs**
Hong-Jae Shin, LG Display, Paju-si, Gyeonggi-do, Korea

Session 5: OLED Fundamentals (OLEDs)

Tuesday, May 25 / 10:50 am – 12:10 pm / Ballroom 6E

Chair: Chin-Hsin (Fred) Chen, Shanghai Jiao Tong University

Co-Chair: Eliav Haskal, Philips Research Laboratories

- 5.1: **Purity of OLED Materials and the Implication on Device-Performance**
Heinrich Becker, Merck KGaA, Frankfurt, Germany
- 5.2: **Probing Chemical Instability of Aromatic Hydrocarbons in Operating OLEDs**
Denis Kondakov, Eastman Kodak Co., Rochester, NY, USA
- 5.3: **Control of Emission Zone in Blue-Phosphorescent OLEDs by Material Design**
Evgueni Polikarpov, Pacific Northwest National Laboratory, Richland, WA
- 5.4: **Distinguished Paper: OLEDs Integrated with Internal Scattering Structure for Enhancing Optical Out-Coupling**
Hong-Wei Chang, National Taiwan University, Taipei, Taiwan

Session 6: Display Drivers and Interfaces (*Display Electronics*)

Tuesday, May 25 / 10:50 am – 12:30 pm / Room 608-610

Chair: *Oh-Kyong Kwon, Hanyang University*

Co-Chair: *Dr. Taesung Kim, Apple*

- 6.1: **A Size Efficient 10-bit DAC with Multi-Path Current Interpolation and Weighted Transconductors for the AMLCDs**
Gyu-Sung Park, KAIST, Daejeon, Korea
- 6.2: **A 10-bit Modified VCC Interpolation and DVO Correction Using Drain-Current Injection**
Sung-Woo Lee, KAIST, Daejeon, Korea
- 6.3: **A Low-EMI 2-Gbps Clock-Aligned-to-Data Intra-Panel Interface (CADI) for TFT-LCD with the VSYNC-Embedded Clock and Equalization**
Jongjin Lim, LG Display Co., Ltd., Paju-si, Korea
- 6.4: **A Clock-Embedded Voltage Differential Signaling (CVDS) for Chip-on-Glass Application of TFT-LCDs**
Hyun Kyu Jeon, Silicon Works, Daejeon, Korea
- 6.5: ***Late-News Paper:* The enhanced Reduced Voltage Differential Signaling (eRVDS) Interface with Clock Embedded Scheme for Chip-On-Glass TFT-LCD Applications**
Dong Hoon Baek, Samsung Electronics Co. Ltd, Yongin-City Gyeonggi-Do, Korea
- 6.6: ***Late-News Paper:* A Low Quiescent Current and Fast Settling Output Buffer with Boosting Slew-rate for Large LCD Driver**
Il Kwon Chang, MagnaChip Semiconductor, Japan, Seoul, Korea

Session 7: Blue-Phase Devices I (*Liquid-Crystal Technology*)

Tuesday, May 25 / 10:50 am – 12:10 pm / Room 611-612

Chair: *Philip J. Bos, Kent State University*

Co-Chair: *Sung Tae Shin, Samsung Electronics Co., Ltd., LCD Business*

- 7.1: ***Distinguished Paper:* Low-Voltage Blue-Phase LCDs with Patterned Electrodes**
Linghui Rao, University of Central Florida, Orlando, FL, USA
- 7.2: **Wide-Temperature-Range Blue-Phase Liquid Crystals for Display Applications**
Jie Xiang, Kent State University, Kent, OH, USA
- 7.3: **Development of 3.4-in. QHD LCD Having Blue-Phase LC and Oxide-Semiconductor TFTs**
Takeshi Nishi, Semiconductor Energy Laboratory Co., Ltd, Kanagawa, Japan
- 7.4: **Extended Kerr Effect in a Polymer-Stabilized Blue-Phase Liquid-Crystal Composite**
Jin Yan, University of Central Florida, Orlando, FL, USA

Session 8: Image Quality (*Applied Vision*)

Tuesday, May 25 / 10:50 am – 12:10 pm / Room 615-617

Chair: *Eli Peli, Schepens Eye Research Institute, Harvard Medical School*

Co-Chair: *Sakuichi Ohtsuka, Kagoshima University*

- 8.1: ***Invited Paper:* Enhancing the Visible with the Invisible: Exploiting Near-Infrared to Advance Computational Photography and Computer Vision**
Sabine Susstrunk, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
- 8.2: **Factors Affecting Image-Quality Preferences**
PremNandhini Satgunam, The Schepens Eye Research Institute, Harvard Medical School, Boston, MA, USA
- 8.3: **Visual Modeling of Upscaled Image Discrimination**
Jon Speigle, Sharp Labs. of America, Camas, WA, USA
- 8.4: **Perceptual Quality Assessment for Motion-Compensated Frame Interpolation**
Kang-Sun Choi, Korea University, Seoul, Korea

Session 9: Green Technologies in Display Manufacturing (*Green Technology / Display Manufacturing*)

Tuesday, May 25 / 10:50 am – 12:10 pm / Room 618-620

Chair: *Don Carkner, CH2M HILL*

Co-Chair: *Clive Gierbolini, Corning Incorporated*

- 9.1: ***Invited Paper:* Green Technology in LCDs**
Jun Souk, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea
- 9.2: ***Invited Paper:* Green LCD Technologies**
Po-Lun Chen, AU Optronics Corp., Hsinchu, Taiwan
- 9.3: **Power-Efficient LC TV with Smart Grid Demand Response Functionality**
Louis Kerofsky, Sharp Laboratories of America, Camas, WA, USA
- 9.4: ***Invited Paper:* EcoDesign for TV Displays**
Cornelis Teunissen, Philips Consumer Lifestyle, Eindhoven, The Netherlands

Session 10: Crosstalk in Stereoscopic Displays (*3D / Display Measurement*)

Tuesday, May 25 / 2:00 – 3:20 pm / Ballroom 6B

Chair: *Michael E. Becker, Display-Metrology & Systems*

Co-Chair: *Jae-Hyeung Park, Chungbuk National University*

- 10.1: **Crosstalk Simulation for Polarization-Switching 3-D LCD**

- Youngji Ko, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea*
- 10.2: Crosstalk Suppression by Image Processing in 3-D Displays**
Yu-Cheng Chang, National Chiao Tung University, Hsinchu, Taiwan
- 10.3: Crosstalk Evaluation of Shutter-Type Stereoscopic 3-D Displays**
Cheng-Cheng Pan, Chi Mei Optoelectronics Corp., Tainan, Taiwan
- 10.4: Measuring Gray-to-Gray Crosstalk in a LCD-Based Time-Sequential Stereoscopic Display**
Sergey Shestak, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

Session 11: OLED Device I (OLEDs)

Tuesday, May 25 / 2:00 – 3:20 pm / Ballroom 6E

Chair: *Denis Y. Kondakov, Eastman Kodak Co.*

Co-Chair: *Ray Kwong, Universal Display Corp.*

- 11.1: *Invited Paper:* 15-in. RGBW Panel Using Two-Stacked White OLEDs and Color Filter for Large-Sized Display Applications**
Chang-Wook Han, LG Display Co., Ltd, Gyeonggi-do, Korea
- 11.2: A 2.4-in. AMOLED with IGZO TFTs and Inverted OLED Devices**
Hsing-Hung Hsieh, AU Optronics Corp., Hsinchu, Taiwan
- 11.3: *Distinguished Paper:* LTPS-Based Transparent AMOLED**
Young Woo Song, Samsung Mobile Displays, Yongin, Korea
- 11.4: Transparent AMOLED Display Based on Bottom-Emission Structure**
Jinkoo Chung, Samsung Mobile Display, Yongin, Korea

Session 12: Color Sequential (Display Electronics / Display Systems)

Tuesday, May 25 / 2:00 – 3:20 pm / Room 608-610

Chair: *Michiel A. Klompenhouwer, Philips Research Laboratories*

Co-Chair: *Han-Ping D. Shieh, Display Institute, National Chiao Tung University*

- 12.1: Color-Breakup Suppression in Field-Sequential Five-Primary-Color LCDs**
Hui Chuan Cheng, University of Central Florida, Orlando, FL, USA
- 12.2: Novel Addressing Method for Color-Filter-Less Field-Sequential LCDs**
Yi-Han Hsieh, National Chiao Tung University, Hsinchu, Taiwan
- 12.3: Multi-LC/BL Algorithmic Technique in Field-Sequential-Color LCDs for Color-Breakup Suppression**
Ke-Horng Chen, National Chiao Tung University, Hsinchu, Taiwan
- 12.4: Real-Time Adaptive Backlight Algorithm for Field-Sequential-Color Displays**
Shih-Hsun Chien, National Chiao Tung University, Hsinchu, Taiwan

Session 13: Blue-Phase Devices II (Liquid-Crystal Technology)

Tuesday, May 25 / 2:00 – 3:20 pm / Room 611-612

Chair: *Shin Tson Wu, University of Central Florida*

Co-Chair: *Seung-Hee Lee, Chonbuk National University*

- 13.1: Low-Voltage and High-Transmittance Polymer-Stabilized Blue-Phase LCDs**
Meizi Jiao, University of Central Florida, Orlando, FL, USA
- 13.2: Optimization of Electrode Shapes for High-Performance Optically Isotropic LCD**
Seung-Hee Lee, Chonbuk National University, Chonbuk, Korea
- 13.3: Submillisecond Gray-to-Gray Response Time of Polymer-Stabilized Blue-Phase Liquid Crystals**
Kuan-Ming Chen, University of Central Florida, Orlando, FL, USA
- 13.4: Viewing-Angle-Controllable Displays Using a Blue-Phase Liquid-Crystal Cell**
Linghui Rao, University of Central Florida, Orlando, FL, USA

Session 14: Contrast and Sharpness (Applied Vision)

Tuesday, May 25 / 2:00 – 3:20 pm / Room 615-617

Chair: *Michael E. Miller, Eastman Kodak Co.*

Co-Chair: *Ingrid Heynderickx, Philips Research Laboratories*

- 14.1: Evaluation of Blur-Edge Time as a Predictor of Perceived Motion Blur**
Kjell Brunnström, Acreo AB, Kista, Sweden
- 14.2: Visible Motion Blur: A Perceptual Metric for Display Motion Blur**
Andrew Watson, NASA Ames Research Center, Moffett Field, CA, USA
- 14.3: Reserved Highlight Region for HDR and Megacontrast Display Algorithms**
Scott Daly, Sharp Laboratories of America, Camas, WA, USA
- 14.4: Contrast Requirements for OLEDs and LCDs Based on Human-Eye Glare**
Erno Langendijk, Philips Research Laboratories, Eindhoven, The Netherlands

Session 15: Low-Power E-Paper and Other Bistable Displays (Green Technology / Liquid-Crystal Technology)

Tuesday, May 25 / 2:00 – 3:20 pm / Room 618-620

Chair: *Anthony C. Lowe, Lambent Consultancy*

Co-Chair: *Matthew E. Sousa, 3M*

- 15.1: **Optically Rewritable Liquid-Crystal Technology: A New Green E-Paper Approach**
Vladimir Chigrinov, Hong Kong University of Science & Technology, Kowloon Hong Kong
- 15.2: **Bistable D3 Electrowetting Display Products and Applications**
Jurgen Rawert, Adt Deutschland GmbH, Bad Soden, Germany
- 15.3: **Optical Optimization of the Single-Polarizer BiNem Display for e-Reading Applications**
Jesper Osterman, NEMOPTIC, Magny Les Hameaux, France
- 15.4: **Invited Paper: Low-Cost Zenithal Bistable Display with Improved White State**
Cliff Jones, ZBD Displays, Malvern, UK

Session 16: Autostereoscopic Displays (3-D / Display Systems)

Tuesday, May 25 / 3:40 – 5:20 pm / Ballroom 6B

Chair: *Jae-Hyeung Park, Chungbuk National University*

Co-Chair: *Brian T. Schowengerdt, University of Washington*

- 16.1: **Prototyping of Glasses-Free Table-Style 3-D Display for Tabletop Tasks**
Shunsuke Yoshida, National Institute of Information and Communications Technology, Kyoto, Japan
- 16.2: **Backlight for View-Sequential Autostereoscopic 3-D**
Adrian Travis, Microsoft, Redmond, WA, USA
- 16.3: **Directional Backlight Lightguide Considerations for Full Resolution Autostereoscopic 3D Displays**
John Schultz, 3M, Saint Paul, MN, USA
- 16.4: **The Optics of an Autostereoscopic Multi-Viewer Display**
Eero Willman, University College London, London, UK
- 16.5: **Directional Backlight Timing Requirements for Full-Resolution Autostereoscopic 3-D Displays**
John Schultz, 3M, Saint Paul, MN, USA

Session 17: TFT Processing (Active-Matrix Devices)

Tuesday, May 25 / 3:40 – 4:50 pm / Ballroom 6C

Chair: *Willem Den Boer, Guardian Industries*

Co-Chair: *Man Wong, Hong Kong University of Science & Technology*

- 17.1: **Novel Patterning Process for Mask Reduction**
Joon-Young Yang, LG Display Co., Ltd., Seoul, Korea
- 17.2: **A Novel Five-Photomask LTPS CMOS Structure with Improved Storage Capacitor for AMLCD Application**
Kum Mi Oh, LG Display Co., Ltd, Gyeonggi-do, Korea
- 17.3: **a-Si:H TFTs with a New Hybrid Dielectric Highly Stable under Mechanical and Electrical Stress**
Lin Han, Princeton University, Princeton, NJ, USA
- 17.4: **Late-News Paper: Contact Resistance and Process Integration Effects on High-Performance Oxide TFTs with Solution-Deposited Semiconductor and Gate Dielectric Layers**
Jae-seok Heo, LG Display R&D Center, Paju, Gyeonggi-do, Korea

Session 18: OLED Device II (OLEDs)

Tuesday, May 25 / 3:40 – 5:00 pm / Ballroom 6E

Chair: *Sven Murano, Novaled AG*

Co-Chair: *Lee-Mi Do, ETRI*

- 18.1: **Invited Paper: Oxide TFT Driving Transparent AMOLED**
Sang-Hee Park, ETRI, Daejeon, Korea
- 18.2: **20.7-in. QSXGA White and Black Medical Display Employing White OLEDs**
Chang-Wook Han, LG Display Co. Ltd, Gyeonggi-do, Korea
- 18.3: **Low-Power 3.4-in. Quarter-High-Definition OLED Display Using In-Ga-Zn-Oxide TFTs and White Tandem OLED**
Hiroyuki Miyake, Semiconductor Energy Laboratory Co.,Ltd., Kanagawa, Japan
- 18.4: **A New Seamless Foldable OLED Display Composed of Multi Display Panels.**
HongShik Shim, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea
- 18.5: **Efficient Tandem White-OLED Devices for Medical Display Applications**
Changwoong Chu, Samsung Mobile Display, Gyeonggi-do, Korea

Session 19: Multi-Primary Displays (Display Electronics)

Tuesday, May 25 / 3:40 – 5:10 pm / Room 608-610

Chair: *Michiel A. Klompenhouwer, Philips Research Laboratories*

Co-Chair: *Xu Dong, PLM, Inc.*

- 19.1: **The Most-Power-Efficient 11.6-in. Full-HD LCD Using RGBW Technology**
Bong-Hyun You, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea
- 19.2: **Adaptive Luminance and Saturation Control for RGBW OLED Displays**
Michael Miller, Eastman Kodak Co., Honeoye Falls, NY, USA
- 19.3: **Spatial Analysis of Multi-Primary-Color Matrix Arrangements for Mobile Displays**
Moshe Ben Chorin, Genoa Color Technologies, Herzlia, Israel
- 19.4: **Color-Management Systems on Wide-Gamut Display Devices with Multi-Primary Colors**

Akiko Yoshida, Sharp Corp., Nara, Japan

- 19.5: **Late-News Paper: A New Advantage of Multi-Primary-Color Displays**
Kazuyoshi Yoshiyama, SHARP Corporation, Tenri, Japan

Session 20: Cholesteric Displays (Liquid-Crystal Technology)

Tuesday, May 25 / 3:40 – 5:00 pm / Room 611-612

Chair: Terry Scheffer, Motif, Inc.

Co-Chair: Xiao-Yang Huang, Ebulent Technologies Corp.

- 20.1: **Single-Substrate Cholesteric LCD by Ink-Jet-Printing Liquid PIPS Solution**
Chen-Chun Hsu, ITRI, Hsinchu, Taiwan
- 20.2: **Full-Color Flexible Cholesteric Display on a Single Substrate**
Ji-Hoon Lee, NDIS Corp, Chungnam, Korea
- 20.3: **Full-Color Cholesteric LCD with High Color Performance**
Kuan-Ting Chen, ITRI, Hsinchu, Taiwan
- 20.4: **Scattering Profile of Polymer-Stabilized Cholesteric Texture Displays**
Shawn Hurley, Liquid Crystal Institute, Kent, OH, USA

Session 21: Field-Emission Displays and Emitters (FEDs)

Tuesday, May 25 / 3:40 – 5:00 pm / Room 615-617

Chair: Masayuki Nakamoto, Shizuoka University

Co-Chair: Myung Hwan Oh, Dankook University

- 21.1: **Invited Paper: Challenge to Full-Color Quantum Dot Display**
Byoung Lyong Choi, Samsung Electronics Co., Ltd., Yongin, Korea
- 21.2: **Fabrication and Properties of Planar-Gate-Type Triode with CNT Emitters for Backlight Units**
Yong Zhang, Fuzhou University, Fuzhou, China
- 21.3: **Controllable Nano-Scale Fissure Formation with a Special Conductive Film Structure in Surface-Conduction Electron-Emitter Device**
Sheng Li Wu, Xi'an Jiaotong University, Xi'an, China
- 21.4: **Distinguished Paper: Switching of Carbon-Nanotube Emitters with Integrated MOSFETs**
Kyu Chang Park, Kyung Hee University, Seoul, Korea

Session 22: Novel Power Reduction Techniques (Green Technology)

Tuesday, May 25 / 3:40 – 5:00 pm / Room 618-620

Chair: Don Carkner, CH2M HILL

Co-Chair: Jyrki Kimmel, Nokia Research Center

- 22.1: **Low-Power Driving Scheme for High-Frame-Rate LCD TVs**
Hyoungsik Nam, Samsung Electronics Co., Ltd., Asan, Korea
- 22.2: **WITHDRAWN**
- 22.3: **Quantified Evaluation for Clipping Artifact of Local Dimming in LCDs**
Hanfeng Chen, Samsung Electronics Co., Ltd, Gyeonggi-do, Korea
- 22.4: **In-Cell Multiple Ambient-Light-Sensor (ALSs) LCD Integration Using Si-Based Photonic Sensor by a-Si TFT Technology**
An-Thung Cho, AU Optronics Corp., Hsinchu, Taiwan

Session 3DC: Special Session on 3D Cinema (3-D)

Tuesday, May 26 / 7:30 – 10:00 pm / Exhibition Hall 4A

Chair: Brian Schowengerdt, University of Washington

Co-Chair: Andrew Woods, Curtin University, Perth, Australia

Session 23: Autostereoscopic Display Measurements (3-D)

Wednesday, May 26 / 9:00 – 10:20 am / Ballroom 6B

Chair: Stephen P. Atwood, Azonix Corp.

Co-Chair: Frank F. Rochow, Adviser

- 23.1: **Viewing Angle and Imaging Polarization Analysis of Polarization-Based Stereoscopic 3-D Displays**
Pierre Boher, ELDIM, Herouville, Saint Clair France
- 23.2: **Optical-Performance-Analysis Method of Autostereoscopic 3-D Displays**
Joo Young Lee, Samsung Electronics Co. Ltd, Gyeonggi-do, Korea
- 23.3: **Characterization of 3-D Image Quality of Autostereoscopic Displays: Proposal of Interocular 3-D Purity**
Tsutomu Horikoshi, NTT DOCOMO, Kanagawa, Japan
- 23.4: **Qualified Viewing Spaces for Near-to-Eye and Autostereoscopic Displays**
Toni Jarvenpaa, Nokia Corp., Tampere, Finland

Session 24: Novel Pixel Design (Active-Matrix Devices)

Wednesday, May 26 / 9:00 – 10:10 am / Ballroom 6C

Chair: John Zhong, Apple, Inc.

Co-Chair: Tohru Nishibe, Toshiba Mobile Display Co., Ltd.

- 24.1: **A Vertical Common Electrodes Structure for High Aperture Ratio and Stable IPS-Mode TFT-LCD**
Jae Young Oh, LG Display Co., Ltd, Gyeonggi-do, Korea
- 24.2: **IPS-Mode Panel for High-Speed Driving**
Youngmi Tak, LG Display Co., Ltd, Gyeonggi-do, Korea
- 24.3: **Late-News Paper: Novel Pixel Circuits for In-Cell Capacitance Type Force Sensitive Touch Panel**
Christopher Brown, Sharp Laboratories of Europe Ltd, Oxford, UK

Session 25: OLED Device III (OLEDs)

Wednesday, May 26 / 9:00 – 10:20 am / Ballroom 6E

Chair: Eric W. Forsythe, Army Research Laboratory

Co-Chair: Jang Hyuk Kwon, Kyung Hee University

- 25.1: **Invited Paper: White-Emitting Molecule: Realizing Molecular Pixel from Covalently Bonded Subpixels**
Soo Young Park, Seoul National University, Seoul, Korea
- 25.2: **Invited Paper: Concepts for Highly Efficient White OLEDs**
Sebastian Reineke, Institut für Angewandte Photophysik, Dresden, Germany
- 25.3: **High-Performance Scalable Display with Passive OLEDs**
Nobuo Terazaki, Mitsubishi Electric Co., Ltd., Tokyo, Japan
- 25.4: **High-Brightness Large-Area White OLED Fabricated by Meniscus Printing Process**
Haruhi Oh-oka, Toshiba Corp., Kawasaki, Japan

Session 26: Driving Electronic Paper (Display Electronics)

Wednesday, May 26 / 9:00 – 10:20 am / Room 608-610

Chair: Richard McCartney, National Semiconductor Corp.

Co-Chair: Hyungsik Nam, Samsung Electronics Co., Ltd.

- 26.1: **Invited Paper: Drive Systems for Electronic-Paper Displays**
Ian French, Prime View International, Ltd., Brighton, UK
- 26.2: **A Single-Inductor Multi-Output Converter with Multi-Vector Current Control in Power-Saving Driving Skill of Electronic-Paper Displays**
Ke-Horng Chen, National Chiao Tung University, Hsinchu, Taiwan
- 26.3: **High Integration and Functionality Controller for Active-Matrix Electrophoretic Display**
Chi-Ming Lu, Chunghwa Picture Tubes, Ltd., Bade, Taiwan
- 26.4: **Invited Paper: ID Document Technologies with Bendable AMOLED Displays**
Joerg Fischer, Bundesdruckerei GmbH, Berlin, Germany

Session 27: Ferroelectric Liquid-Crystal Devices (Liquid-Crystal Technology)

Wednesday, May 26 / 9:00 – 10:10 am / Room 611-612

Chair: Michael Wand, LC Vision, LLC

Co-Chair: Shohei Naemura, Tottori University

- 27.1: **Invited Paper: New Results in Field-Sequential Analog FLCs Fabricated by Ink-Jet Printing**
Masato Okabe, Dai Nippon Printing Co., Ltd., Chiba, Japan
- 27.2: **Fast Photoaligned V-Shaped Ferroelectric LCD Based on DHF Mode**
Vladimir Chigrinov, Hong Kong University of Science & Technology, Kowloon, Hong Kong
- 27.3: **Horizontal Chevron Defect-Free Half-V-Mode Ferroelectric Liquid-Crystal Devices Based on Asymmetrical Hybrid Alignment Techniques**
Chi-Wen Lin, National Chiao Tung University, Hsinchu, Taiwan
- 27.4: **Late-News Paper: A New Mode LCD with Intrinsic Continuous Grayscale Memory Using Ferroelectric Liquid Crystalline Polymer**
Osamu Sato, Japan Laboratory, LG Display Co., Ltd, Yokohama, Japan

Session 28: Emissive Displays (Emissive Displays)

Wednesday, May 26 / 9:00 – 10:20 AM / Room 615-617

Chair: Ryuichi Murai, Panasonic Co.

Co-Chair: Harm Tolner, Tolner Technology

- 28.1: **Invited Paper: Novel, Bright, Inorganic EL Flexible Displays Comprising Ink-Jet-Printed Silver-Backed Electrodes**
Robert Withnall, Brunel University, Uxbridge, middlesex UK
- 28.2: **Reduction of Temporal Image-Sticking Phenomenon by Using a High-Purity Single-Crystal MgO in a Plasma Display**
Soon Bae Kim, Samsung SDI Co.,Ltd., Cheonan, Korea
- 28.3: **ZnO- Based n-n Isotope Heterojunction LEDs by Low-Cost Spray Pyrolysis**
Junliang Zhao, Nanyang Technological University, Singapore
- 28.4: **Characterization of Negative Electron Affinity for MgO Film by UV Photoelectron Spectroscopy**

Session 29: Power Saving Device Designs (*Green Technology / Display Systems*)

Wednesday, May 26 / 9:00 – 10:00 am / Room 618-620

Chair: *Masaru Suzuki, SKC Haas Display Films*

Co-Chair: *Don Carkner, CH2M HILL*

- 29.1: **Power-Savings Design of WLED Backlit LCDs by the Use of Unequal-Area RGB Color Filters**
Senfar Wen, Chung Hua University, Hsinchu, Taiwan
- 29.2: **Power Savings: A New Advantage of Multi-Primary-Color Displays Derived by Numerical Analysis**
Yasuhiro Yoshida, Sharp Corp., Nara Japan
- 29.3: **RGBW-LED Backlight System for Ultra-Low-Power-Consumption Field-Sequential-Color LCDs**
Chi-Chu Tsai, National Chiao Tung University, Hsinchu, Taiwan
- 29.4: **An Energy-Recycling Technique for Minimum Power Loss in Directly Lit RGB-LED Backlight Driver**
Ming-Hsin Huang, National Chiao Tung University, Hsinchu, Taiwan

Session 30: 2-D / 3-D Switching for Autostereoscopic Displays (*3-D*)

Wednesday, May 26 / 10:40 – 12:00 pm / Ballroom 6B

Chair: *Jean-Noel Perbet, THALES Avionics*

Co-Chair: *John W. Parker, III, Research and Engineering Development, Inc.*

- 30.1: **Fast-Switching Fresnel Liquid-Crystal Lens for Autostereoscopic 2-D/3-D Display**
Chih-Wei Chen, National Chiao Tung University, Hsinchu, Taiwan
- 30.2: **Autostereoscopic 2-D/3-D Displays by Using Liquid-Crystal Lens**
Sheng Liu, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan
- 30.3: **Autostereoscopic Partial 2-D/3-D Switchable Display Using Liquid-Crystal Gradient Index Lens**
Ayako Takagi, Toshiba Corp., Kawasaki, Japan
- 30.4: **2-D/3-D Hybrid System for Digital-Signage Application**
Chih-Hong Ding, National Chiao Tung University, Hsinchu, Taiwan

Session 31: Touch-Technology Development (*Touch Technology*)

Wednesday, May 26 / 10:40 am – 12:00 pm / Ballroom 6C

Chair: *Bob Senior, Noise Limit*

- 31.1: ***Invited Paper:* A Touching Story: A Personal Perspective on the History of Touch Interfaces Past and Future**
Bill Buxton, Microsoft Research, Redmond, WA, USA
- 31.2: **Ultra-Thin High-Transparency Projective Capacitive-Touch Sensing Film**
Chen-Pang Kung, DTC / ITRI, Hsinchu, Taiwan
- 31.3: **A System LCD with an Integrated 3-D Input Device**
Christopher Brown, Sharp Laboratories of Europe, Ltd., Oxford, UK
- 31.4: **Specifying Tactile Performances of Multi-Touch Systems**
Gauthier Chastan, Stantum, Bordeaux, France

Session 32: OLED Material I (*OLEDs*)

Wednesday, May 26 / 10:40 am – 12:00 pm / Ballroom 6E

Chair: *Chishio Hosokawa, Idemitsu Kosan Co., Ltd.*

Co-Chair: *Daniel LeCloux, DuPont Displays, Inc.*

- 32.1: ***Invited Paper:* Plexcore OC for HIL Applications in OLED Lighting and Display**
Christopher Brown, Plextronics, Pittsburgh, PA, USA
- 32.2: **Electron Transporters Based on Lithium Complexes: Transition from Electron-Injecting to Electron-Transporting Characteristics**
Poopathy Kathirgamanathan, OLED-T, Ltd., Harrow, UK
- 32.3: **Advanced Materials for Printed OLED Displays**
Norman Herron, DuPont, Wilmington, DE, USA
- 32.4: **Quantum-Dot LEDs for Full-Color Active-Matrix Displays**
Peter Kazlas, QD Vision, Watertown, MA, USA

Session 33: Electronic Paper I (*Flexible Displays*)

Wednesday, May 26 / 10:40 am – 12:00 pm / Room 608-610

Chair: *Kevin Gahagan, Corning Incorporated*

Co-Chair: *Jang Lin Chen, DTC/ITRI*

- 33.1: **QUE: An e-Reader Built Using Flexible-Display Technology**
Seamus Burns, Plastic Logic, Ltd., Cambridge, UK
- 33.2: **Large-Sized Full-Color eReader Displays Based on Electrowetting**
Johan Feenstra, Liquavista BV, Eindhoven, The Netherlands
- 33.3: **Flexible Electrofluidic Displays Using Brilliantly Colored Pigments**

Kenneth Dean, Gamma Dynamics, Phoenix, AZ, USA

Session 34: IPS Technology (Liquid-Crystal Technology)

Wednesday, May 26 / 10:40 am – 12:00 pm / Room 611-612

Chair: Kei-Hsiung Yang, National Chiao Tung University

Co-Chair: Akihiro Mochizuki, Nano Loa USA, Inc., USA

34.1: Realization of True Black Quality in IPS-Mode LCD for LCD-TV Applications

Kyeong Jin Kim, LG Display Co., Ltd., Gyeonggi-do, Korea

34.2: Viewing-Angle Compensation of IPS and Circularly Polarized VA-LCD by Using a Novel Ultra-Thin Homeotropically Aligned Liquid-Crystalline Polymer Film

Yuji Takahashi, Nippon Oil Corp., Yokohama, Japan

34.3: Drawing-Induced Biaxiality Change from a Positive-C to a Negative-A Plates and Its Application in Wide-Viewing-Angle IPS LCDs

Young-Cheol Yang, Kent State University, Kent, OH, USA

34.4: A Single-Cell-Gap Transflective LCD with Dual Common Electrodes and Coupling Capacitance

Chih-Lung Lin, InnoLux Display Corp., Miaoli County, Taiwan

Session 35: Exo-Emission (Emissive Displays)

Wednesday, May 26 / 10:40 am – 12:00 pm / Room 615-617

Chair: Qun Yan, Sichuan COC Display Devices Co., Ltd

Co-Chair: Tomokazu Shiga, The University of Electro-Communications

35.1: Invited Paper: Very Sensitive Measurement Method of Plasma-Display Exo-Emission

Larry Weber, Consultant, New Paltz, NY, USA

35.2: Invited Paper: A Consideration of Excitation and De-Excitation Process of MgO Protective Layer

Hiroshi Kajiyama, Hiroshima University, Hiroshima, Japan

35.3: Exo-Electron Measurements in ACPDPs with Exposed Address Electrode Structure

Noriyuki Awaji, Hiroshima University, Higashi-Hiroshima, Japan

35.4: Temperature Dependence of Exo-Electron Emission for ACPDPs

Sang-Hoon Yoon, Hong-Ik University, Seoul, Korea

Session 37: Human Factors of 3-D Displays (3-D / Applied Vision)

Wednesday, May 26 / 3:30 – 4:50 pm / Ballroom 6B

Chair: Ingrid Heynderickx, Philips Research Laboratories

Co-Chair: Yi Pai Huang, National Chiao Tung University

37.1: Invited Paper: 3-D Technology Development and the Human Factor Effect

Chao-Yuan Chen, AU Optronics Corp., Hsinchu, Taiwan

37.2: New Methodology for Evaluating the Quality of Stereoscopic Images

Cedric Marchessoux, BARCO, Medical Imaging Division, Kortrijk, Belgium

37.3: The Effect of Camera Distortions on Perception of Stereoscopic Scenes

Lachlan Pockett, Nokia, Tampere, Finland

37.4: Accommodation Response in Viewing Integral Imaging

ByoungHo Lee, Seoul National University, Seoul, Korea

Session 38: Multi-Touch Systems and Developments (Touch Technology)

Wednesday, May 26 / 3:30 – 4:50 pm / Ballroom 6C

Chair: Bob Senior, Noise Limit

Co-Chair:

38.1: Invited Paper: What Multi-Touch is All About

Jeff Han, Perceptive Pixel, New York, NY, USA

38.2: Direct Display Interaction via Simultaneous Pen and Multi-Touch Input

Ken Hinckley, Microsoft Research, Redmond, WA, USA

38.3: The Structure and Driving Method of Multi-Touch Resistive Touch Panels

Chih-Chang Lai, Wintek Corp., Taichung, Taiwan

38.4: Invited Paper: In-Cell-Embedded Touch-Screen Technology for Large-Sized LCD Application

Seiki Takahashi, Samsung Electronics, Chungcheongnam, Korea

Session 39: OLED Material II (OLEDs)

Wednesday, May 26 / 3:30 – 4:50 pm / Ballroom 6E

Chair: Chin-Hsin (Fred) Chen, Shanghai Jiao Tong University

Co-Chair: Eric W. Forsythe, Army Research Laboratory

39.1: Solution-Processed Molecular Materials in the Fabrication of Flexible Phosphorescence-Based OLEDs

Chin-Ti Chen, Academia Sinica, Taipei, Taiwan

39.2: Efficient Single-Layer Small-Molecule Blue OLEDs Based on a Multifunctional Bipolar Transport Material

Meng-Huan Ho, National Chiao Tung University, Hsinchu, Taiwan

- 39.3: **Material and Device Structure Design of Blue-Phosphorescent OLEDs for High Efficiency and Enhanced Stability**
Wataru Sotoyama, Fujifilm Corp., Kanagawa, Japan
- 39.4: **Highly Efficient Fluorescent Blue OLEDs with Efficiency-Enhancement Layer**
Masahiro Kawamura, Idemitsu Kosan Co., Ltd., Chiba, Japan

Session 40: Electronic Paper II (Flexible Displays)

Wednesday, May 26 / 3:30 – 4:50 pm / Room 608-610

Chair: Robert W. Zehner, E Ink Corp.

Co-Chair: Paul Drzaic, Consultant

- 40.1: **Invited Paper: Dyed Polymeric Microparticles for Color Rendering in Electrophoretic Displays**
Mark Goulding, Merck Chemicals Ltd., LLC, Southampton, UK
- 40.2: **Application and Effects of Orientation Control Technology in Electronic Paper Using Cholesteric Liquid Crystals**
Takuto Kato, Fujitsu Laboratories, Ltd., Kanagawa, Japan
- 40.3: **4.8-in. QVGA Color Reflective AMPDLCD Driven by Printed OFETs**
Joo Young Kim, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea
- 40.4: **Research of Various Mode Color PDLC Structures for Flexible Reflective Display**
Jae-eun Jang, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea

Session 41: Liquid-Crystal Alignment (Liquid-Crystal Technology)

Wednesday, May 26 / 3:30 – 5:00 pm / Room 611-612

Chair: Birendra Bahadur, Rockwell Collins

Co-Chair: Huang-Ming Philip Chen, National Chiao Tung University

- 41.1: **Distinguished Paper: World's First Photoaligned LCD Technology Applied to Gen 10 Factory**
Koichi Miyachi, Sharp Corp., Nara, Japan
- 41.2: **Use of Fluorinated Alignment Layer to Reduce Image Retention in LCDs**
Lu Lu, Kent State University, Kent, OH, USA
- 41.3: **5° SiO_x Deposition Alignment: A Possible Solution for Low-Power LCDs Using Low-Frequency Applied-Voltage Waveforms**
Yi Huang, Kent State University, Kent, OH, USA
- 41.4: **Discontinuous Alignment Thin-Film Formation by Self-Organized Dewetting**
Chung Yung Lee, Hong Kong University of Science & Technology, Kowloon, Hong Kong
- 41.5: **Late-News Paper: Novel field-induced pre-tilt alignment technique using a photo-reactive alignment layer for VA LCD**
Shunichi Suwa, Sony Corporation, Atsugi-shi, Kanagawa Japan

Session 42: PDP TV (Emissive Displays)

Wednesday, May 26 / 3:30 – 4:50 pm / Room 615-617

Chair: Larry F. Weber, Consultant

Co-Chair: Ravi Rao, SRI International

- 42.1: **Invited Paper: Development of High-Performance Panel and High-Speed 3-D Driving Technology for World's First Full-HD 3-D Plasma Displays**
Mitsuhiro Ishizuka, Panasonic Corp., Osaka, Japan
- 42.2: **Using the Selective-Reset to Achieve Real Black with 50-in. Full-HD PDPs**
DaeHun Kim, LG Electronics, Seoul, Korea
- 42.3: **New Cell Structure with Priming Cells and Driving Method for High-Speed Addressing in ACPDPs**
Hiroyuki Tachibana, Panasonic Corp., Osaka, Japan
- 42.4: **Effect of Carbon Nanotubes in a PDP Back Plate on Addressing Discharge Time Lag**
Mitsuhiro Murata, Panasonic Corp., Osaka, Japan

Session 43: Green Technologies in Active-Matrix Devices (Green Technology / Active-Matrix Devices)

Wednesday, May 26 / 3:30 – 4:50 pm / Room 618-620

Chair: Tohru Nishibe, Toshiba Mobile Display Co., Ltd.

Co-Chair: Roger G. Stewart, Surland Mountain Associates

- 43.1: **A Novel Multi-Level Memory In Pixel Technology for Ultra-Low-Power LTPS TFT-LCD**
Naoki Ueda, Sharp Corp., Tenri, Japan
- 43.2: **MOVED TO P.210**
- 43.3: **Power-Efficient AMOLED Display with Novel Four Subpixel Architecture and Driving Scheme**
Woo-Young So, Universal Display Corp., Ewing, NJ, USA
- 43.4: **Low-Power LCD Using In-Ga-Zn-Oxide TFTs Based on Variable Frame Frequency**
Seiko Amamo, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 44: Volumetric and Integral Imaging (3-D / Display Systems)

Thursday, May 27 / 9:00 – 10:20 am / Ballroom 6B

Chair: Jean-Pierre Guillou, Sony Electronics Co.

Co-Chair: Paul T. Breen, Jr., Applied Display Technology

- 44.1: **Volumetric Display Using Scanned Fiber Array**

Brian Schowengerdt, University of Washington, Seattle, WA, USA

44.2: An Analysis of Color Uniformity of Three-Dimensional Image Based on Rotating-LED-Array Volumetric Display System

Xu Liu, Zhejiang University, Zhejiang, China

44.3: Characterization of Motion Parallax on Multi-View/Integral-Imaging Displays

Shin-ichi Uehara, Japanese Ergonomics National Committee, Tokyo, Japan

44.4: *Invited Paper*: A Novel Stereo Display that Presents Nearly Correct Focus Cues

Martin Banks, University of California, Berkeley, Berkeley, CA, USA

Session 45: Display-Embedded Touch Solutions (*Touch Technology*)

Thursday, May 27 / 9:00 – 10:20 am / Ballroom 6C

Chair: Man Wong, Hong Kong University of Science & Technology

Co-Chair: John Zhong, Apple, Inc.

45.1: Touch-Panel-Embedded IPS-LCD with Parasitic Current-Reduction Technique

Hiroshi Haga, NEC LCD Technologies, Ltd., Kanagawa, Japan

45.2: *Distinguished Paper*: Novel LCD with a Sensing Backlight

Kwonju Yi, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

45.3: On-Cell Projected Capacitive-Type Touch Sensor for NBPC

Sang-Soo Hwang, LG Display Co., Ltd., Gyeonggi-do, Korea

45.4: WITHDRAWN

45.5: A System LCD with Optical Input Function Using IR Backlight Subtraction Scheme

Kohei Tanaka, Sharp Corp., Nara, Japan

45.6: *Invited Paper*: Photosensing Circuits Using LTPS TFTs and Photodiode for Smart Functional Displays

Oh-Kyong Kwon, Hanyang University, Seoul, Korea

Session 46: OLED Manufacturing (*OLEDs / Display Manufacturing*)

Thursday, May 27 / 9:00 – 10:20 am / Ballroom 6E

Chair: Tariq A. Ali, eMagin Corp.

Co-Chair: Toshiaki Arai, Sony Corp.

46.1: New Concept for Large-Area White-OLED Production for Lighting

Uwe Hoffmann, Applied Materials, Alzenau, Germany

46.2: Organic Deposition Methods for AMOLEDs by Using a Compact Linear Nozzle Source (CLNS) and a Hybrid Source

Sungmoon Kim, R&D Center of YAS Co., Ltd., Gyeonggi-do, Korea

46.3: OLED Manufacturing System Equipped by Planar Evaporation Source

Eishi Fujimoto, Hitachi Zosen Corp., Osaka, Japan

46.4: Up-Scaling of OLED Manufacturing for Lighting Applications

Michael Eritt, Fraunhofer-Institute for Photonic Microsystems (IPMS), Dresden, Germany

Session 47: Flexible OLEDs (*Flexible Displays / OLEDs*)

Thursday, May 27 / 9:00 – 10:20 am / Room 608-610

Chair: Chung-Chih Wu, National Taiwan University

Co-Chair: Nick Colaneri, ASU Flexible Display Center

47.1: *Invited Paper*: Highly Robust Flexible AMOLED Display on Plastic Substrate with New Structure

Dong-Un Jin, Samsung Mobile Display, Gyeonggi-do, Korea

47.2: 2.8-in. WQVGA Flexible AMOLED Using High-Performance LTPS TFT on Plastic Substrates

Sunguk An, Samsung Mobile Display, Gyeonggi-do, Korea

47.3: A Rollable AMOLED Display Driven by OTFTs

Makoto Noda, Display Device Development Division, Co., Kanagawa, Japan

47.4: Improved Thin, Flexible, Full-Color OLED Displays

John Hamer, Eastman Kodak Co., Rochester, NY, USA

Session 48: VA-Mode LCD I (*Liquid-Crystal Technology*)

Thursday, May 27 / 9:00 – 10:20 am / Room 611-612

Chair: Allan R. Kmetz, Consultant

Co-Chair: Yukito Saitoh, FUJIFILM Corp.

48.1: Advanced Liquid-Crystal Materials for the Polymer-Sustained Vertically Aligned (PS-VA) Mode

Achim Goetz, Merck KGaA, Darmstadt, Germany

48.2: Advanced VA Mode with Fast Gray-Scale Response and Wide Viewing Angle in a Bend Liquid-Crystal Configuration

Takehisa Sakurai, Sharp Corp., Nara, Japan

48.3: *Distinguished Paper*: A Novel Hole-Induced Vertical-Alignment LC Mode with Superior Transmittance

Yong Kyu Jang, Samsung Electronics Co., Ltd., Chungcheongnam-do, Korea

48.4: Advanced-Super-View Pixel Modeling

Richard James, University College London, London, UK

Session 49: Protective Layer (*Emissive Displays*)

Thursday, May 27 / 9:00 – 10:20 am / Room 615-617

Chair: *Yong Seog Kim, Hongik University*

Co-Chair: *Hiroshi Kajiyama, Hiroshima University*

- 49.1: **Invited Paper: High Luminous Efficacy and Low-Driving-Voltage Discharges in PDP with SrO-MgO Double Protecting Layer**
Ki-Woong Whang, Seoul National University, Seoul, Korea
- 49.2: **Effects of Sealing Atmosphere on Protective Layers in ACPDPs**
Min-Suk Lee, Samsung SDI, Chungcheongnam-do, Korea
- 49.3: **Discharge Characteristics of PDPs with the Ternary Oxides Protective Layers Manufactured by Using All-In-Vacuum Process**
Takanobu Yano, ULVAC, Inc, Tsukuba, Japan
- 49.4: **Photon and Electron Excitation Characteristics of MgO Submicron Crystals Made from Precursors**
Qing Li, Southeast University, Jiangsu, China

Session 50: Measuring Contrast and Motion Artifacts (*Display Measurement*)

Thursday, May 27 / 9:00 – 10:20 am / Room 618-620

Chair: *Frank F. Rochow, Adviser*

Co-Chair: *Stephen P. Atwood, Azonix Corp.*

- 50.1: **WITHDRAWN**
- 50.2: **Mura-Detection Automation in LCD Panels by Thresholding Fused Normalized Gradient and Second Derivative Responses**
Hani Jamleh, National Taiwan University, Taipei, Taiwan
- 50.3: **Proposal of Evaluation Method for Local-Dimming Backlights**
Hideki Ichioka, Sharp Corp., Nara, Japan
- 50.4: **Method to Measure Perceptual Resolution of Moving-Picture Display**
Jong-Ho Chong, Samsung Mobile Display, Gyeonggi-do, Korea

Session 51: 3-D TV and 3-D Video (*3-D / Applications*)

Thursday, May 27 / 10:40 am – 12:00 pm / Ballroom 6B

Chair: *Brian H. Berkeley, Samsung Mobile Display*

Co-Chair: *Jyrki Kimmel, Nokia Research Center*

- 51.1: **Novel Simultaneous Emission Driving Scheme for Crosstalk-Free 3-D AMOLED TV**
Baek-Woon Lee, Samsung Mobile Display, Gyeonggi-do, Korea
- 51.2: **New 240-Hz Driving Method for Full-HD and High-Quality 3-D LCD TV**
Dae Sik Kim, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea
- 51.3: **An Ultra-Low-Cost 2-D/3-D Video-Conversion System**
Chao-Chung Cheng, National Taiwan University, Taipei, Taiwan
- 51.4: **3-D Video Framework Design for FVV Realization**
Lachlan Pockett, Nokia Research Center, Tampere, Finland

Session 52: OLEDs for Lighting Applications (*Solid-State Lighting / OLEDs*)

Thursday, May 27, 2010 / 10:40 am – 12:00 pm / Ballroom 6C

Chair: *Yasunori Kijima, Sony Corp.*

Co-Chair: *Hyedong Kim, Samsung Mobile Display*

- 52.1: **Invited Paper: Highly Efficient White Top-Emission PIN OLEDs for Displays and Lighting**
Jan Birnstock, Novald AG, Dresden, Germany
- 52.2: **Hybrid Tandem White OLEDs with High Efficiency and Long Lifetime for AMOLED Displays and Solid-State Lighting**
Tukaram Hatwar, Eastman Kodak Co., Penfield, NY, USA
- 52.3: **OLEDs for Lighting Applications**
Hans-Peter Loebel, Philips Technologie GmbH, Aachen, Germany
- 52.4: **Highly Efficient Phosphorescent OLED Lighting Panels for Solid-State Lighting**
Peter Levermore, Universal Display Corp., Trenton, NJ, USA

Session 53: AMOLED I (*Active-Matrix Devices*)

Thursday, May 27 / 10:40 am – 12:20 pm / Ballroom 6E

Chair: *Takatoshi Tsujimura, Kodak Japan, Ltd.*

Co-Chair: *Mike Hack, Universal Display Corp.*

- 53.1: **Invited Paper: AMOLED Pixel Design**
Roger Stewart, Sourland Mountain Associates, Hillsborough, NJ, USA
- 53.2: **A 30-in. AMOLED Based on Sequential Lateral Solidification Process**
Jae Beom Choi, Samsung Mobile Display, Gyeonggi-do Korea
- 53.3: **Redundant Pixel Line Insertion for Laser-Crystallization-Based Large-Sized LTPS AMOLED Displays**
Sangmooh Choi, Samsung Mobile Display, Gyeonggi-do, Korea

- 53.4: **Off-Current Control Method to Improve Random Mura of SGS AMOLED Panel**
Deok-Young Choi, Samsung Mobile Display, Gyeonggi-do, Korea
- 53.5: **High-Speed AMOLED Pixel Circuit and Driving Scheme**
Dong-Wook Park, Samsung Mobile Display, Gyeonggi-do, Korea

Session 54: Flexible-Display Manufacturing I (*Flexible Displays / Display Manufacturing*)

Thursday, May 27 / 10:40 – 11:50 am / Room 608-610

Chair: *Bruce Gnade, University of Texas at Dallas*

Co-Chair: *Fang-Chen F. Luo, AU Optronics Corp.*

- 54.1: **Invited Paper: A Novel Approach to Make Flexible Active-Matrix Displays**
Jang Lin Chen, ITRI, Hsinchu, Taiwan
- 54.2: **Direct Printed Electrodes of Transparent Conductive Polymers for Flexible Electronic Paper**
Masayuki Nishii, Bridgestone Corp., Tokyo, Japan
- 54.3: **WITHDRAWN**
- 54.4: **Late-News Paper: Input-Output Integrated Flexible Display System**
Hajime Yamaguchi, Toshiba Corporation, Kawasaki, Kanagawa Japan

Session 55: VA-Mode LCD II (*Liquid-Crystal Technology*)

Thursday, May 27 / 10:40 am – 12:00 pm / Room 611-612

Chair: *Shui-Chih Alan Lien, AU Optronics Corp.*

Co-Chair: *Gang Xu, Shanghai Tianma Micro-Electronics Co., Ltd.*

- 55.1: **Development of Low-Haze VA Compensation TAC Film and Proposal of Compensation Film Arrangement for Improving CR in VA Panel**
Eiichiro Aminaka, FUJIFILM Corp., Kanagawa, Japan
- 55.2: **Reduction of Light Leakage by Optical Compensation Film in VA LCDs**
Makoto Ishiguro, FUJIFILM Corp., Kanagawa, Japan
- 55.3: **A Novel Push-Pull VA Technology for High-Performance LCD TV**
Yanbing Qiao, InfoVision Optoelectronics, Kunshan, China

Session 56: Novel and Emerging Display Technologies (*Display Systems*)

Thursday, May 27 / 10:40 am – 12:00 pm / Room 615-617

Chair: *Jean-Noel Perbet, THALES Avionics*

Co-Chair: *Paul T. Breen, Jr., Applied Display Technology*

- 56.1: **Sunlight Readability of Digital Micro-Shutter-Based Display Technology**
Jignesh Gandhi, Pixtronix, Inc., Andover, MA, USA
- 56.2: **A New Reflective-Type Transparent Display Using Cholesteric Liquid Crystal**
Jun-Bo Yoon, KAIST, Daejeon, Korea
- 56.3: **A Charge-Trapping-Suppression Method for Quick-Response Electrowetting Displays**
Yung-Hsiang Chiu, ITRI, Hsinchu, Taiwan
- 56.4: **Novel Approach to Camouflaging Seams in Tiled-Display Applications**
Delia Zsivanov, Christie Digital, Inc., Kitchener, Ontario, Canada

Session 57: HMDs and HUDs (*Display Systems*)

Thursday, May 27 / 10:40 am – 12:00 pm / Room 618-620

Chair: *Jean-Pierre Guillou, Sony Electronics*

Co-Chair: *John W. Parker, III, Research and Engineering Development, Inc.*

- 57.1: **Near-to-Eye Display Using Scanning Fiber Display Engine**
Brian Schowengerdt, University of Washington, Seattle, WA, USA
- 57.2: **Invited Paper: Modern Cockpit Displays and Concepts**
Jean-Noel Perbet, THALES Avionics, Le Haillan, France
- 57.3: **Invited Paper: Head-Mounted Display: Optical Design**
Jannick Rolland, Orlando, FL, USA

Session 58: Novel 3-D Displays (*3-D / Display Systems*)

Thursday, May 27 / 1:30 – 3:00 pm / Ballroom 6B

Chair: *Brian T. Schowengerdt, University of Washington*

Co-Chair: *John W. Parker, III, Research and Engineering Development, Inc.*

- 58.1: **3-D Interactive Display with Embedded Optical Sensor**
Pi-Cheng Wu, National Chiao Tung University, Hsinchu, Taiwan
- 58.2: **Spatial-Temporal Hybrid Multi-View 3-D Display**
Ching-Wen Wei, National Chiao Tung University, Hsinchu, Taiwan
- 58.3: **Interference-Filter-Based Stereoscopic LCD**
Arnold Simon, Infitec GmbH, Neu-Ulm, Germany

- 58.4: **Distinguished Paper:** Control of Subjective Depth on 3-D Displays by a Quantified Monocular Depth Cue
Shuichi Takahashi, Sony Corp., Tokyo, Japan
- 58.5: **Late-News Paper:** Full HD 3D displays using the Xpol®
Yoshiyuki Tamura, ARISAWA Mfg. Co.,Ltd., Joetsu, Niigata prefect Japan

Session 59: Solid-State Lighting (Solid-State Lighting/ Applications)

Thursday, May 27, 2010 / 1:30 – 2:50 pm / Ballroom 6C

Chair: *K Kalantar, Nippon Leiz*

- 59.1: **Invited Paper:** On the Recent Progress of LED Lighting in Japan
Kiyoshi Nishimura, Toshiba Lighting & Technology Corp., Kanagawa, Japan
- 59.2: **Durable Solid-State Flexible LED Devices**
Derrick Banerjee, West Virginia University, Morgantown, WV, USA
- 59.3: **Phosphor Modeling for Phosphor-Converted LEDs**
Chien Hsiang Hung, National Chiao Tung University, Hsinchu, Taiwan
- 59.4: **LED Drivers: From Displays to General Lighting**
Michael Kretzmer, Endicott Research Group, Inc, Endicott, NY, USA

Session 60: AMOLED II (Active-Matrix Displays)

Thursday, May 27 / 1:30 – 2:50 pm / Ballroom 6E

Chair: *Norbert Fruehauf, University of Stuttgart*

Co-Chair: *Hyun Jae Kim, Yonsei University*

- 60.1: **Invited Paper:** AMLCDs and AMOLEDs: How Do They Compare for Green Energy Efficiency?
Mike Hack, Universal Display Corp., Ewing, NJ, USA
- 60.2: **Low-Power-Consumptive Luminance Compensation for a Digital-Driving AMOLED Display Using a Multiple Output Boost Converter**
Se Won Wang, KAIST, Daejeon, Korea
- 60.3: **AMOLED Display Performance Using Transfer-Printed Circuits**
Ronald Cok, Eastman Kodak Co., Rochester, NY, USA
- 60.4: **Distinguished Paper:** A Fully Integrated 1-in. AMOLED Display Using Current Feedback Based on a Five-Mask LTPS CMOS Process
Patrick Schalberger, University of Stuttgart, Stuttgart, Germany

Session 61: Flexible Backplanes I (Flexible Displays)

Thursday, May 27 / 1:30 – 2:50 pm / Room 608-610

Chair: *Shawn O'Rourke, dpiX*

Co-Chair: *Douglas Loy, Flexible Display Center*

- 61.1: **Invited Paper:** ZnO TFTs and Circuits on Flexible Polymeric Substrates by Low-Temperature PEALD
Thomas Jackson, Penn State University, University Park, PA, USA
- 61.2: **Invited Paper:** High-Performance Organic-Inorganic Hybrid Plastic Substrate for Flexible Displays and Electronics
Jia-Ming Liu, ITRI, Hsinchu, Taiwan
- 61.3: **a-Si TFT Technology for Rollable OLED Displays**
Sigurd Wagner, Princeton University, Princeton, NJ, USA
- 61.4: **High-Performance and Highly Rollable a-IGZO TFTs Adopting Composite Electrodes and Transparent Polyimide Substrates**
Yen-Cheng Kung, National Taiwan University, Taipei, Taiwan

Session 62: Nanostructure-Enhanced Liquid-Crystal Devices (Liquid-Crystal Technology)

Thursday, May 27 / 1:30 – 2:30 pm / Room 611-612

Chair: *Hoi-Sing Kwok, Hong Kong University of Science & Technology*

Co-Chair: *Hyunchul Choi, LG DisplayCo., Ltd.*

- 62.1: **Reduction of the Threshold Voltage and Enhancement of Contrast Ratio in Liquid-Crystal Devices with BaTiO₃ Nanoparticles-Embedded Surface Alignment Layers**
Mitsuhiro Akimoto, Tokyo University of Science, Yamaguchi, Japan
- 62.2: **Alignment of Liquid Crystal with Nanoporous Anodic Aluminum Oxide (np-AAO) Layer for LCD Application**
Chitsung Hong, National Tsing Hua University, Hsinchu, Taiwan
- 62.3: **A Novel Nanostructure-Enhanced Pi-Cell for Transition-Rate Improvement**
Szu-Fen Chen, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

Session 63: Display Manufacturing: Reflective Technologies (Display Manufacturing)

Thursday, May 27 / 1:30 – 2:50 pm / Room 615-617

Chair: *Lauren F. Palmateer, Qualcomm MEMS Technologies*

Co-Chair: *Greg Gibson, FAS Holdings Group*

- 63.1: **Invited Paper:** The Impact of Materials and System Design Choices on Reflective Display Quality for Mobile Device Applications
William Cummings, Qualcomm MEMS Technologies, San Diego, CA, USA
- 63.2: **Single-Layer Multi-Color Electrowetting Display by Using Ink-Jet-Printing Technology and Fluid-Motion Prediction with Simulation**
Wei-Yuan Cheng, ITRI, Hsinchu, Taiwan
- 63.3: **Back-Exposure Manufacturing Route for MEMS Reflective Display**
Hyun-Cheol Park, Hong-Ik University, Seoul, Korea
- 63.4: **A Monolithic Elastomer Substrate with Lens Array for 3-D LCDs**
Sin-Doo Lee, Seoul National University, Seoul, Korea

Session 64: Novel Near-to-Eye and Head-Up Displays (*Applications*)

Thursday, May 27 / 1:30 – 2:50 pm / Room 618-620

Chair: Susan K. Jones, eMagin Corp.

- 64.1: **Display Technologies for Therapeutic Applications of Virtual Reality**
Hunter Hoffman, University of Washington, Seattle, WA
- 64.2: **Hyperrealistic Display for Automotive Application**
Takashi Sasaki, Toshiba Corp., Kawasaki, Japan
- 64.3: **Vertical Expansion Problem in Light-Guide-Type Near-to-Eye Displays**
Tapani Levola, Nokia Research Center, Tampere, Finland
- 64.4: **Late-News Paper:** A New Quick-Adjust Head Mounted Display System
David Eccles, Rockwell Collins, Valley Center, CA USA

Session 65: Projection Lighting (*Solid-State Lighting / Projection*)

Thursday, May 27, 2010 / 4:00 – 5:30 pm / Ballroom 6C

Chair: Frederic J. Kahn, Kahn International

Co-Chair: Matthew S. Brennessoltz, Insight Media

- 65.1: **Invited Paper:** The Physics and Commercialization of Dual Paraboloid Reflectors for Projection Systems
Kenneth Li, Wavien, Inc., Valencia, CA, USA
- 65.2: **Advanced Laser Module with Intra-Frame-Operating Color-Management for Mobile Projection**
Jan Drumm, OSRAM GmbH, Regensburg, Germany
- 65.3: **Distinguished Paper:** High-Efficiency Optical System for Ultra-Short-Throw-Distance Projector Based on Multi-Laser Light Source
Michihiro Okuda, SANYO Electric Co., Ltd., Daito, Japan
- 65.4: **High-Brightness LED-Based Projector with NTSC 120% Wide Color Gamut**
Feng-Chuan Tsai, Chi Lin Technology Co., Ltd, Tainan, Taiwan
- 65.5: **Late-News Paper:** Casio Projectors with Hybrid LED/Laser/Phosphor Illumination
Joseph Gillio, Casio America, Dover, NJ

Session 66: Lighting Materials and Applications (*Solid-State Lighting / Emissive Displays*)

Thursday, May 27, 2010 / 5:40 – 7:00 pm / Ballroom 6C

Chair: Gerrit Oversluizen, Philips Research Laboratories

Co-Chair: Ravi Rao, SRI International

- 66.1: **Application of UV-LEDs to LCD Backlights**
Yoshihiko Muramoto, Nitride Semiconductors Co., Ltd., Naruto, Japan
- 66.2: **Invited Paper:** Remote Phosphor for Future LED Backlights and Lighting Applications
Wen-Chi Chang, KISmart, Hsinchu, Taiwan
- 66.3: **Emission Characteristics of ZnO-Incorporated CaTiO₃:Pr³⁺ Phosphor and Its Application for Solid-State Lighting**
Seung-Youl Kang, ETRI, Taejeon, Korea
- 66.4: **Invited Paper:** High-Quality White OLEDs and Resource Saving Fabrication Processes for Lighting Application
Takuya Komoda, Panasonic Electric Works Co., Ltd., Osaka, Japan

Session 67: High Dynamic Range (*Display Systems / Display Electronics*)

Friday, May 28 / 9:00 – 10:20 am / Ballroom 6B

Chair: Masaru Suzuki, SKC Haas Display Films

Co-Chair: Nikhil Balram, Marvell Semiconductor, Inc.

- 67.1: **A Monolithic Block-Wise Functional Light Guide for 2-D Dimming LCD Backlight**
K Kalantar, Nippon Leiz, Tokyo, Japan
- 67.2: **Compensation Methods for Local-Dimming Backlights with RGB-LEDs**
Takayuki Murai, Sharp Corp., Tenri, Japan
- 67.3: **Low-Power LCDs Using an Image Integrity-Based Backlight-Dimming Algorithm**
Suk Ju Kang, Pohang University of Science and Technology, Pohang, Korea

- 67.4: **Use of a Spatial Multiresolution Visual Model with Display Characterization and Ambient Information to Adaptively Shape the Tone Scales of Mobile Displays**
Scott Daly, Sharp Laboratories of America, Camas, WA, USA

Session 68: Lighting Design (Solid-State Lighting / Display Systems)

Friday, May 28 / 9:00 – 10:40 am / Ballroom 6C

Chair: *K Kalantar, Nippon Leiz*

Co-Chair: *Sungkyoo Lim, Dankook University*

- 68.1: **Angular Uniform White-Light-Emitting Diodes with an Internal Reflector Cup**
Ling Zhu, University of Hong Kong, Hong Kong
- 68.2: **Zoomable-Spot Lighting Fixture Using WRGB LED**
Lo Hsin-Hsiang, Enginner, Hsinchu, Taiwan
- 68.3: **High-Power LED Lamp with Efficient Heat Exchange**
Sungkyoo Lim, Dankook University, Chungcheongnam-do, Korea
- 68.4: **Optimal Additive Mixing Approach via Multi-Color LEDs Platform**
Ming-Chin Chien, National Chiao Tung University, Hsinchu, Taiwan
- 68.5: **A New Light Source: E3 Linear Plasma Lamp**
Sungkyoo Lim, Dankook University, Chungcheongnam-do, Korea

Session 69: Oxide TFTs I (Active-Matrix Devices)

Friday, May 28 / 9:00 – 10:00 am / Ballroom 6E

Chair: *Dr. Hyun Jae Kim, Yonsei University*

Co-Chair: *Fujio Okumura, NEC Corp.*

- 69.1: **Photo-Leakage Current in ZnO TFTs for Transparent Electronics**
Yudai Kamada, Kyoto University, Kyoto, Japan
- 69.2: **Highly Reliable Oxide-Semiconductor TFT for AMOLED Displays**
Toshiaki Arai, Sony Corp., Kanagawa, Japan
- 69.3: **Amorphous Oxide TFT Backplanes for Large-Sized AMOLED TVs**
Yeon Gon Mo, Samsung Mobile Display, Gyeonggi-do, Korea
- 69.4: **Novel Flexible Media Integrated with Transparent Metal-Oxide TFT Backplane**
Jong-Souk Yeo, Hewlett Packard Company, Corvallis, OR USA

Session 70: Flexible-Display Manufacturing II (Display Manufacturing / Flexible Displays)

Friday, May 28 / 9:00 – 10:20 am / Room 608-610

Chair: *Elliott Schlam, Elliott Schlam Associates*

Co-Chair: *David C. Morton, Army Research Laboratory*

- 70.1: **Laser Direct Imaging Enabling Color in Electronic-Paper Displays**
Eran Elizur, KaleidoFlex Technologies, Inc., Vancouver, British Columbia, Canada
- 70.2: ***Distinguished Paper:* Flexible-Display Technology for Mass Production Using Improved Etching Technology**
Seung-Han Paek, LG Display, Gyeonggi-do, Korea
- 70.3: **Ink-Jet Printing for Selective Conductor Patterning for Displays and Flexible Circuits**
Ram Ramakrishnan, Uni-Pixel Displays, Inc., The Woodlands, TX, USA
- 70.4: **Single-Pass Printing of Picoliter Droplets for Flexible-Display Applications**
Jan Sumerel, FUJIFILM Dimatix, Santa Clara, CA, USA

Session 71: Projection Components (Projection)

Friday, May 28 / 9:00 – 10:00 am / Room 611-612

Chair: *Robert L. Melcher, Melcher International, LLC*

Co-Chair: *Tapani Levola, Nokia Research Center*

- 71.1: ***Invited Paper:* High-Resolution Microdisplays for Pico-Projectors**
Karl Guttag, Syndiant Inc, Dallas, TX, USA
- 71.2: **An Integrated Photo-Sensor Array on a LCOS Microdisplay for Automatic White Balance**
Ho-Chi Huang, Himax Display, Inc., Tainan County, Taiwan
- 71.3: ***Invited Paper:* Speckle Suppression by Means of Ferroelectric LC Cell**
Igor Kompanets, Lebedev Physical Institute of RAS, Moscow, Russia

Session 72: Display Manufacturing: Testing (Display Manufacturing)

Friday, May 28 / 9:00 – 10:00 am / Room 615-617

Chair: *Fang-Chen F. Luo, AU Optronics Corp.*

Co-Chair: *Byung Chul Ahn, LG Display Co., Ltd.*

- 72.1: **Strength of LCD Panel During Bending**
Mao-Hsing Lin, Chi Mei Optoelectronics Corp, Tainan, Taiwan
- 72.2: **Strength Measurements of Thin AMLCD Panels**
Suresh Gulati, Corning Incorporated, Corning, NY, USA

- 72.3: **Protrusive Interception for TFT-LCDs Using Side-View Illumination Method**
Fu-Ming Tzu, National Cheng Kung University, Tainan, Taiwan

Session 73: Emerging Display Applications (Applications)

Friday, May 28 / 9:00 – 10:20 am / Room 618-620

Chair: *Ian Underwood, University of Edinburgh*

Co-Chair: *Andras I. Lakatos*

- 73.1: **Large-Area Plasma-Panel Radiation Detectors for Nuclear Medicine Imaging to the Super-Large Hadron Collider**
Peter Friedman, Integrated Sensors LLC, Toledo, OH, USA
- 73.2: **A Novel Design for Broadcasting LCD**
Ji-Young Ahn, LG Display Co., Ltd., Gyeonggi-do, Korea
- 73.3: **Flexible Smart-Card Display**
Erica Montbach, Kent Displays, Inc., Kent, OH, USA
- 73.4: **WITHDRAWN**

Session 74: LED Backlighting (Display Systems)

Friday, May 28 / 10:40 am – 12:00 pm / Ballroom 6B

Chair: *Wei Chen, Apple Computer*

Co-Chair: *K Kalantar, Nippon Leiz*

- 74.1: **Invited Paper: LED Backlighting for LCD TVs**
Winfried Schwedler, Osram Opto Semiconductor, Regensburg, Germany
- 74.2: **High-Efficiency Hybrid LED Backlight for Large-Area LCD TV**
James Gourlay, Design LED Products Ltd., Livingston, Scotland
- 74.3: **Color-Separation Backlight System with Mosaic Pixel Arrangements**
Po Chou Chen, National Tsing Hua University, Hsinchu, Taiwan
- 74.4: **A Novel Ultra-Thin Backlight System without Optical Sheets Using a Newly Developed Multi-Layered Lightguide**
Takeshi Ishida, Sharp Corp., Nara, Japan

Session 75: Displays and Lighting Technologies (Solid-State Lighting / Applied Vision)

Friday, May 28, 2010 / 10:40 am – 12:20 pm / Ballroom 6C

Chair: *Jennifer Gille, Qualcomm*

Co-Chair: *Michael E. Miller, Eastman Kodak Co.*

- 75.1: **Invited Paper: The Many Roles of Illumination in Information Display**
Lorne Whitehead, University of British Columbia, Vancouver, British Columbia, Canada
- 75.2: **Invited Paper: LEDs: From Displays to Lighting**
Dragan Sekulovski, Philips Research Europe, Eindhoven, The Netherlands
- 75.3: **Is Brighter Always Better? The Effects of Display and Ambient Luminance on Preferences for Digital Signage.**
Pearl Guterman, York University, Toronto, Ontario, Canada
- 75.4: **Evaluation of Human Reactions on Displays with LED Backlight and a Technical Concept of a Circadian Effective Display**
Oliver Stefani, Fraunhofer IAO, Stuttgart, Germany
- 75.5: **Evaluating Procedure of Color-Rendering Property on Reflective LCDs**
Yen-Hsing Lu, National Chiao Tung University, Hsinchu, Taiwan

Session 76: Oxide TFTs II (Active-Matrix Devices)

Friday, May 28 / 10:40 am – 12:00 pm / Ballroom 6E

Chair: *Kalluri R. Sarma, Honeywell, Inc.*

Co-Chair: *Chin-Hsin (Fred) Chen, Shanghai Jiao Tong University*

- 76.1: **High-Aperture-Ratio LCD Using In-Ga-Zn-Oxide TFTs without Storage Capacitor**
Hideaki Shishido, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
- 76.2: **Development of Highly Stable a-IGZO TFT with TiO₂ as a Passivation Layer for Active-Matrix Display**
Hyun-Sik Seo, LG Display Co., Ltd., Gyeonggi-do, Korea
- 76.3: **World's Largest LCD Using Amorphous Indium-Gallium-Zinc-Oxide TFTs**
Hsiung-Hsing Lu, AU Optronics Corporation, Hsinchu, Taiwan
- 76.4: **A Simple Technology for Realizing High-Mobility Self-Aligned Zinc Oxide TFTs**
Zhi Ye, Hong Kong University of Science and Technology, Kowloon, Hong Kong

Session 77: Flexible Backplanes II (Flexible Displays)

Friday, May 28 / 10:40 am – 12:00 pm / Room 608-610

Chair: *Ruiqing Ma, Universal Display Corp.*

Co-Chair: *David R. Allee, Arizona State University*

- 77.1: **Invited Paper:** **TFT Technologies for Flexible Displays**
Jin Jang, Kyung Hee University, Seoul, Korea
- 77.2: **Invited Paper:** **Technical Issues towards All-Ink-Jet-Printed Organic TFTs**
Yongtaek Hong, Seoul National University, Seoul, Korea
- 77.3: **Invited Paper:** **Roll-to-Roll Manufacturing of Backplanes for Paper-Like Displays**
Carl Taussig, Hewlett-Packard Laboratories, Palo Alto, CA, USA
- 77.4: **Invited Paper:** **Development of Flexible Displays Driven by Organic TFTs**
Kazumasa Nomoto, Sony Corp., Kanagawa, Japan

Session 78: Mobile Projection (Projection)

Friday, May 28 / 10:40 – 12:00 pm / Room 611-612

Chair: *Ming-Hsien Wu, Hamamatsu Corp*

Co-Chair: *Patrick Candry, Barco N.V.*

- 78.1: **Ultra-Compact Polarization Recycling System for White-Light LED-Based Pico-Projection System**
Tan Li, Hong Kong University of Science & Technology, Kowloon, Hong Kong
- 78.2: **A Detachable Mobile-Phone Projector Utilizing Color-Filter LCOS Microdisplay**
Jiaxin Sun, Integrated Microdisplays Ltd., Shatin, Hong Kong
- 78.3: **Dual-Mode Projection-Display System for Mobile Devices**
Po-Hung Yao, National Tsing Hua University, Hsinchu, Taiwan
- 78.4: **Compact High-Power Modulated Green Laser for Laser Display**
Yang Lu, McMaster University, Hamilton, Ontario, Canada

Session 79: Display Manufacturing: Processing (Display Manufacturing)

Friday, May 28 / 10:40 am – 12:00 pm / Room 615-617

Chair: *Ion Bitu, Qualcomm MEMS Technologies*

Co-Chair: *Elliott Schlam, Elliott Schlam Associates*

- 79.1: **Advanced Sputtering Equipment Design for FPDs**
Masasuke Matsudai, ULVAC, Kanagawa, Japan
- 79.2: **Wet Patterning of Thin Films in Vertical Transfer Wet Station for TFT Manufacturing**
Jong Hyun Seo, Korea Aerospace University, Goyang, Korea
- 79.3: **Effect of Surface Treatment on the Performance of TIPS Pentacene TFT by Ink-Jet Printing**
Jin Jang, Kyung Hee University, Seoul, Korea
- 79.4: **Light Rolls: High-Throughput Manufacture for LED Lighting and Displays**
James Gourlay, Design LED Products, Ltd., Livingston, Scotland

Session 80: Digital Signage (Applications)

Friday, May 28 / 10:40 – 12:00 pm / Room 618-620

Chair: *Adi Abileah, Planar Systems, Inc.*

Co-Chair: *Robert L. Donofrio, Display Device Consultants, LLC.*

- 80.1: **Technologies and Applications for Large-Sized High-Resolution Tiled-Display System**
Sachin Deshpande, Sharp Laboratories of America, Camas, WA, USA
- 80.2: **60-in. Highly Transparent See-Through Active-Matrix Display without Polarizers**
Eiji Satoh, Sharp Corp., Nara, Japan
- 80.3: **Distinguished Paper: Ultra-Low-Reflective 60-in. LCD with uniform Moth-Eye Surface for Digital Signage**
Tokio Taguchi, Sharp Corp., AVC Liquid Crystal Display Group, Nara, Japan
- 80.4: **Interactive and Natural Viewing of Giga-Pixel Images on Large-Sized Tiled Displays**
Chang Yuan, Sharp Laboratories of America, Camas, WA, USA

Poster Session

Thursday, May 25 / 4:00 – 8:00 pm / Exhibit Hall 4A

3D

- P.1: **3-D Display Using Artificially Generated Motion Parallax and Psychological Factors of Image Size for Extended-Depth Perception**
Kazutake Uehira, Kanagawa Institute of Technology, Kanagawa, Japan
- P.2: **Visual Strain Evaluation of Physiological Effect by Using 3-D Displays**
Mitomo Maeda, Chiba University, Chiba, Japan
- P.3: **Evaluation of Rendering Algorithms for Presenting Layered Information on Holographic Displays**
James Barabas, MIT Media Lab, Cambridge, MA, USA
- P.4: **A Reconfigurable Stereomicroscopic Imaging System for Digital Pathology**
Wei-Chung Cheng, U.S. Food and Drug Administration, Silver Spring, MD
- P.5: **A New 360° Holo-Views Display System with Multi-Vertical Views**
Xu Liu, Zhejiang University, Zhejiang, China
- P.6: **A Novel 3-D Display Based on Spliced Images**

- Haifeng Li, Zhejiang University, Hangzhou, China*
- P.7: A New Information Capacity Analysis of Integral Imaging**
Xu Liu, Zhejiang University, Zhejiang, China
- P.8: Depth-Map-Based Multi-View Synthesis Using Joint Bilateral Upsampling on GPUs**
Yung-Yu Chuang, National Taiwan University, Taipei, Taiwan
- P.9: Integral imaging of 3-D CG Animation Using a Laptop PC and General-Purpose Fly's-Eye Lens**
Kazuhisa Yanaka, Kanagawa Institute of Technology, Kanagawa, Japan
- P.10: Design and Fabrication of Wide View In-Cell Microretarder and Polarizer for Stereoscopic LCD**
Chao-Te Lee, National Taiwan University, Taipei, Taiwan
- P.11: Improvement of 3-D Crosstalk with Over-Driving Method for the Active Retarder 3-D Displays**
Sung-Min Jung, LG Display Co. Ltd, Gyeonggi-do, Korea
- P.12: Depth Super-Resolution for Enhanced Free-Viewpoint TV**
Ilsoon Lim, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea
- P.13: Using LTPS TFTs as Oblique Light Sensors for 3-D Interaction Display**
Yan-Fu Kuo, National Chiao Tung University, Hsinchu, Taiwan

Active-Matrix Devices

- P.14: Development of Ultra-High-Luminance Active-Matrix VFD (AMVFD) for a Head-Up-Display (HUD) System**
Sadao Takano, Futaba Corporation, Chosei, Chiba Japan
- P.15: OTFT Backplane for Electrophoretic Display Fabricated by Combined Printing Technology**
Myung Won Lee, Dong-A University, Busan, Korea
- P.16: A Novel Shift Register for Driving AMOLED Displays**
Chun-Yen Liu, AU Optronics, Hsinchu, Taiwan
- P.17: Amorphous ZTO/ITO Stacked-Channel TFTs with a Field-Effect Mobility of Over 50 cm²/V-sec and Resistant to Channel Thickness Dispersion**
Hironori Wakana, Hitachi, Ltd., Central Research Laboratory, Tokyo, Japan
- P.18: Suppression of Threshold-Voltage Shift of Oxide-Based TFT Employing Thermal Pre-Treatment**
Sun-Jae Kim, Seoul National University, Seoul, Korea
- P.19: The Innovative Solution for Image Defects in Non-Rectangularly Shaped TFT-LCDs**
Yung-Sheng Lin, Innolux, Miaoli County, Taiwan
- P.20: An Efficient Method for Improving the Negative-Bias-Temperature-Stress (NBTS) Stability of Amorphous In-Ga-Zn-Oxide TFTs**
Chen Yi Wu, AU Optronics Corp., Hsinchu, Taiwan
- P.21: Integrated Source Drivers for Electrophoretic Displays Using Low-Temperature IZO TFTs**
Sameer Venugopal, Arizona State University, Tempe, AZ USA
- P.22: Non-Volatile Memory Effect of All-Solution-Processed Oxide TFT with ZnO Nanoparticles as Charge-Trapping Layer**
Hyun Jae Kim, Yonsei University, Seoul, Korea
- P.23: Solution-Processed Amorphous Lanthanum Indium Zinc Oxide TFTs**
Hyun Jae Kim, Yonsei University, Seoul, Korea
- P.24: Self-Aligned Metal Double-Gate Low-Temperature Poly-Si TFTs on Glass Substrates**
Akito Hara, Tohoku Gakuin University, Tagajo, Japan
- P.25: New Polymer-Capped a-IGZO TFT with High Sensitivity to Visible Light for the Development of Integrated Touch Sensor Array**
Hsiao Wen Zan, National Chiao Tung University Institute Of Electro-Optical Engineering, Hsinchu, Taiwan
- P.26: Self-aligned Top-Gate ZnO TFT with Novel Al(2)O(3)/SiO(2) Gate Insulator Structure**
Rongsheng Chen, Hong Kong University of Science and Technology, , Hong Kong
- P.27: Novel AlNiLa Serves as Gate Electrodes of a-Si TFTs for AMLCDs**
Po-Tsun Liu, National Chiao Tung University, Hsinchu, Taiwan
- P.28: Effect of Annealing Temperature on the Reliability of Solution-Processed Zinc Tin Oxide TFTs**
Jeong Soo Lee, Seoul National University, Seoul, Korea
- P.29: a-Si Driver Integration in E-Paper Displays**
Jun Ma, Shanghai Tianma Micro-Electronics Co., Ltd., Shanghai, China
- P.30: Single-Cell-Gap Wide-View Transflective LCD Using Twist Fringe-Field-Switching Mode**
Kun-Tsai Huang, Hannstar Display Corporation, Tainan County, Taiwan
- P.31: A New Threshold Voltage Compensation Technique of poly-Si TFTs for AMOLED Displays Pixel Circuits**
Ilias Pappas, Aristotle University, THESSALONIKI, Greece
- P.32: A New Driving Pixel Circuit to Alleviate AMOLED Degradation**
Paul C.-P. Chao, National Chiao Tung University, Hsinchu, Taiwan
- P.33: Cu-Mn Electrode for a-Si TFT and Its Electrical Characteristics**
Junichi Koike, Tohoku University, Sendai, Japan
- P.34: Influence of Channel Deposition Conditions on Characteristics of Bottom-Gate Oxide TFTs Adopting In-Free Zinc-Tin Oxides**
Cheng-Han Wu, National Taiwan University, Taipei, Taiwan
- P.35: Five-Mask PMOS TFT Process Architecture for Large-Sized AMOLEDs**
Joon-Hoo Choi, Samsung Electronics, Yongin-City, Gyeonggi-do Korea
- P.37: Room-Temperature Top-Gate Self-Aligned Amorphous InGaZnO TFTs Fabricated on Colorless Polyimide Substrate**
Yung-Hui Yeh, Industrial Technology Research Institute, Chutung, Hsinchu Taiwan
- P.38: Unique Electrical Measurement Technology for Compensation, Inspection, and Process Diagnostics of AMOLED HDTV**
Stefan Alexander, IGNIS Innovation Inc., Kitchener, ON Canada
- P.39: A highly Stable a-Si:H TFT Gate Driver Circuit with Reducing Clock Duty Ratio**

- Chih Lung Lin, National Cheng Kung University, Taiwan, Taiwan*
- P.40: Design of Analog Pixel Memory Circuit with Low-Temperature Poly-Si TFTs for Low-Power Application**
Ming-Dou Ker, National Chiao-Tung University, Hsinchu, Taiwan
- P.41: Investigation of the Photon-Enhanced Bias Instability of InGaZnO TFTs for the Application of Transparent AMOLED Displays**
Min Ki Ryu, Electronics and Telecommunications Research Institute, Daejeon, Korea
- P.187: A Novel IPS Cell Structure Driving without Static V_{com}**
YoungMin Jeong, LG Display Co., Ltd., Gyeonggi-do, Korea
- P.201: *Late-News Poster*: High Stable Amorphous Indium Gallium Zinc Oxide TFTs under DC Bias Temperature Stress**
Dae-Hwan Kim, LG Display, Paju, Korea
- P.202: *Late-News Poster*: Long-term Stability of Oxide Semiconductor-Based TFTs**
Pedro Barquinha, CENIMAT, Departamento de Ciéncia Dos Materiais and CEMOP, Faculdade de Ciéncias, Caparica, Portugal
- P.203: *Late-News Poster*: Analysis on AC Stress-Induced Degradation Mechanism of Amorphous Indium-Gallium-Zinc-Oxide Thin Film Transistor Inverters**
Sungchul Kim, Kookmin University, Seoul, Korea
- P.204: *Late-News Poster*: Subgap Density of States-Based Amorphous Oxide Thin Film Transistor Simulator (DAOTS) for Process Optimization and Circuit Design**
Yong Woo Jeon, Kookmin University, Seoul, Korea
- P.205: *Late-News Poster*: Comparison between a-InGaZnO and a-InHfZnO TFTs in Perspective of Subgap Density of States (DOS) in Active Film**
Sangwon Lee, Kookmin University, Seoul, Korea
- P.206: *Late-News Poster*: High Performance As-Deposited Microcrystalline Silicon TFT using High-Density Microwave Plasma Source**
Toshiaki Arai, Sony Corporation, Atsugi-shi, Kanagawa Japan

Applications

- P.42: A New Driver for an Intelligent Modular Display System**
Pieter Bauwens, Ghent University - CMST, Zwijnaarde, Belgium
- P.43: Portable Navigation Device with Head-Up-Display Unit**
Chiu-Ting Hsieh, National Tsing Hua University, Hsinchu, Taiwan
- P.44: Patterned Microlens-Array Films Assisted with Auxiliary Electrodes for Luminance Improvement in Large-Area OLEDs**
Kuan-Yu Chen, National Taiwan University, Taipei, Taiwan
- P.45: Multi-Gray-Level Reflective-LCD Module Design and Its Tiled Application**
Yong Ming Tang, South East University, Nanjing, Jiangsu China
- P.46: Virtual Mobile Display System by a Transparent Window**
Sung Chul Shin, LG Electronics, Seoul, Korea
- P.47: Fast-Evaluation Approach of Predicting CCFL Mechanical Strength in LCD-TV Module**
Wei-Ting Dai, Chi Mei Optoelectronics Corp., Tainan, Taiwan
- P.209: *Late-News Poster*: High Efficiency Uniform LED Surface Light Source**
Chih-Chieh Kang, Southern Taiwan University of Technology, Yung-Kang City, Taiwan

Applied Vision

- P.48: Quantitative Evaluation Method for the White Uniformity of a Large-Sized LED Backlight**
Kumihiko Nagamine, Sony Corporation, Shinagawa-ku, Tokyo Japan
- P.49: Comparison of the Readability of Color Head-Up Displays Using LED and Laser Light Sources**
Karlheinz Blankenbach, Pforzheim University, Pforzheim, Germany
- P.50: Simulating the Effects of Wearing Laser Eye Protection on Color Appearance**
Thomas Kuyk, Northrop Grumman Information Systems, San Antonio, TX USA
- P.51: A Basic Assessment for Color Break-Up on a Field-Sequential Color Display**
Masamitsu Kobayashi, Tenri, Nara, Japan

Display Electronics

- P.52: Alternately Driven Backlight System for Uniform Transmittance Over an LCD Panel**
Hyoungsik Nam, Samsung Electronics, Asan, Korea
- P.53: The Optimal Driving RGB LED on Color-Sequential Displays**
Tzu-Pin Lin, Chunghwa Picture Tubes, Ltd., Bade City, Taoyuan Taiwan
- P.54: Multi-Axis-Adjusted System for RGBW LCDs**
Pei-Lin Hsieh, Chunghwa Picture Tubes, LTD, Taoyuan, Taiwan
- P.55: A Pseudo-Super-Resolution Approach for TV Images**
Xiaomang Zhang, Sharp Corporation, Tenri, Japan
- P.56: Application of the SSC Local-Dimming Algorithm for an Edge-Lit TV**
Tobias Jung, Institute of Microelectronics, Saarbruecken, Germany
- P.57: Dual Equalization Diffusion for AMOLED Power Saving**
Chih-Lei Wu, AU Optronics, Hsinchu, Taiwan
- P.58: A Differential Multi-Bit/Conversion Cyclic DAC for TFT-LCD Column Drivers**
Hoai-Nam Nguyen, Korea Advanced Institute of Science and Technology, Daejeon,

Display Manufacturing

- P.59: Release Planning for Color-Filter Fabs Based on Iterative Simulation**
James Chen, Chung-Yuan Christian University, Chung Li, Taiwan

- P.60: The Performance Enhancement of the Double-Frequency YAG Laser-Crystallized Poly-Si Using a Back-Side Self-Heating Layer of a-Si**
Juan Li, Nankai University, Tianjin, China
- P.61: Recycling and Re-Use of LCD Components and Materials**
Johan Felix, CIT Recycling Development AB, Goteborg, Sweden
- P.62: Wet Patterning of Copper/Molybdenum Thin Films in Phosphoric-Acid Solution**
Jong Hyun Seo, Korea Aerospace University, Goyang-city, Korea
- P.63: *Distinguished Paper*: Solvent-Less Repair Inks for Color-Filter Application**
Huang-Ming Chen, National Chiao Tung University, Hsinchu, Taiwan
- P.64: Using Electroless Plating Technology for Copper Metallization in AMLCD Application**
Po-Tsun Liu, National Chiao Tung University, Hsinchu, Taiwan
- P.189: *Late-News Poster*: Solution-Processed Passivation Layer for a-Si TFTs with High Reliability and Processability for LCD**
Koichi Sugitani, Zeon Corporation, Kawasaki-shi, Japan
- P.190: *Late-News Poster*: Thermal Durability of Poly-Si Films on Highly Engineered Glass for RTA Processes Enabling Advanced TFTs**
Taketsugu Itoh, Corning Holding Japan G.K., Minato-ku, Tokyo Japan
- P.191: *Late-News Poster*: New ACP Design for Flip-Chip LED Packaging with Enhanced Light Extraction Efficiency**
Hirofumi Kondo, Sony Chemical & Information Device Corporation, Kanuma, Japan

Display Measurement

- P.65: Evaluation Method for Moving-Picture Color Smear**
TaeHee Kim, SAMSUNG Electronics Co. Ltd., Suwon-City, Korea
- P.66: Measurement Comparison of Ambient Contrast for LCDs**
Yu-Ping Lan, Center For Measurement Standard/TTRI, Hsinchu, Taiwan
- P.67: Simulation of Backlight Using Bidirectional-Scattering Distribution Function**
Myong-Jo Choi, LG Display Co., Ltd, Paju-si, Korea
- P.68: Evaluation of Motion Blur Based on the Temporal Frequency Characteristics of a Video Camera and LCD TV**
In-Ho Song, School of Electrical Engineering and Computer Science, Kyungbook National Univer, Daegu, Korea
- P.69: Beyond RGB-Primaries: Chromaticity Measurement Issues for Multi-Primary Displays**
Kazunari Tomizawa, Display System Laboratories, Tenri, NARA, Japan
- P.70: Image-Sticking Measuring Method by Usage Model**
Yuichi Maekawa, Kodak Japan, Yokohama, Kanagawa Japan
- P.71: WITHDRAWN**
- P.72: Method for Perceptual Contrast Measurement under Different Ambient Conditions**
Miok Shin, Samsung Mobile Display, Yongin-City, Korea
- P.73: Dynamic Backlight Influence on Motion-Blur Measurement**
Kjell Brunnström, Acreo AB, Kista, Sweden
- P.74: Automatic Parameters Measurement System for Testing of Bistable Cholesteric LCDs with Three Different Driving Sequence Methods and Application of Gray-Level Switching**
Wu-Jeng Li, Display Technology Center (DTC), Industrial Technology Research Institute (ITRI), Chutung, Hsinchu, Taiwan
- P.75: Accurate Estimation of Optimized Overdriving Value for a TN-Mode LCD Panel**
Injae Hwang, LCD Business Samsung Electronics Co., Ltd., Asan-City, Korea

Display Systems

- P.76: Two-Slope Turning Film (TSTF) for Brightness Enhancement**
Xiang-Dong Mi, SKC-Haas Display Films (USA) LLC, Rochester, NY USA
- P.77: Some Requirements on LED Characteristics for LCD-TV Applications**
Chih-Lin Wang, AU Optronics Corporation, Hsinchu, Taiwan
- P.78: DOE Approach to Elimination of Display Mura Induced by LGP Warpage in HTHH Environment**
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