PRELIMINARY PROGRAM

2012 SID INTERNATIONAL SYMPOSIUM

June 5–8, 2012 (Tuesday – Friday)
Boston Convention and Exhibition Center
Boston, Massachusetts USA

Session 1: Annual SID Business Meeting

Tuesday, June 5, 2012 / 8:00 – 8:20 am / Ballroom West

Session 2: Opening Remarks / Keynote Addresses

Tuesday, June 5, 2012 / 8:20 – 10:20 am / Ballroom West

2.1: ***Keynote 1:*** **Recent Breakthroughs for Larger-Sized OLED Displays and Their Application to OLED TV**
Byung Chul Ahn, LG Display Co., Ltd.

2.2: ***Keynote 2:*** **Photonic Display Transformation for Continuous Growth of the Display Industry**
Sung Tae Shin, Samsung Electronics, Co., Ltd.

2.3: ***Keynote 3:*** **Computational Displays: New Opportunities for Interactive, Light Sensitive, and 3D Displays**
Ramash Raskar, MIT Media Lab

Session 3: Oxide TFTs *(Active-Matrix Devices)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Ballroom East

Chair: *Mike Hack, Universal Display Corp.*

Co-Chair: *Jerzy Kanicki, University of Michigan*

3.1: ***Invited Paper:*** **Amorphous-Oxide TFTs: Progress and Issues**
Arokia Nathan, University College London, London, UK

3.2: **An Integrated Gate Driver Circuit Employing Depetion-Mode IGZO TFTs**
Zhongyuan Wu, BOE Technology Group Co., Ltd., Beijing, China

3.3: **High-Speed Shift Register for High-Resolution AMDs with Self-Aligned Coplanar a-IGZO TFTs**
Jin Jang, Kyung Hee University, Seoul, Korea

3.4: ***Late-News Paper:*** **Physical Model and Simulation Platform for High-Level Instability-Aware Design of Amorphous-Oxide Semiconductor Thin-Film Transistors**
Woojoon Kim, Kookmin University, Seoul, Korea

Session 4: Blue-Phase Liquid Crystal 1 *(Liquid-Crystal Technology)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Ballroom West

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

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

4.1: **Low-Voltage and Hysteresis-Free Blue-Phase LCD with Vertical Field Switching**
Hui Chuan Cheng, University of Central Florida, Orlando, FL USA

4.2: **Polymer-Stabilized Blue-Phase Material Driven at Low Voltage**
Tetsuji Ishitani, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

4.3: **Frequency Effects on Blue-Phase Liquid Crystals**
Yan Li, University of Central Florida, Orlando, FL USA

4.4: **New Materials for Polymer-Stabilized Blue Phase**
Michael Wittek, Merck KGaA, Darmstadt, Germany

Session 5: Stereoscopic Display Applications *(3D/Applications)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Room 205AB

Chair: *Jyrki Kimmel, Nokia Research Center*

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

5.1: **A Novel Wide-View Design for Stereoscopic 3D LCDs**
Chia Chiang Hsiao, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China

5.2: **Switchable 2D/3D Display Using Prism Conversion Module**
Wallen Mphepo, Beijing University, Beijing, China

5.3: **Active Light-Field Rendering in Multi-View Display Systems**
Juyong Park, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

5.4: **The Autostereoscopic System with Diffractive Optical Elements**
Qing-Long Deng, National Chiao Tung University, Tainan City, Taiwan

Session 6: Innovations in FPD Analysis *(Display Measurement)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Room 205C
Chair: *Stephen P. Atwood, Azonix Corp.*
Co-Chair: *Frank F. Rochow, Consultant*

6.1: **Influence of TV Media Content on Display Lifetime and Image-Sticking Measurement Techniques**
Andrew Johnson, Dupont Displays, Inc., Santa Barbara, CA USA

6.2: **Viewing-Angle Measurements on Reflective e-Paper Displays**
Dirk Hertel, E Ink Corp., Cambridge, MA USA

6.3: **A New Method for Hot-Spot Mura Quantification and Evaluation in LCD Backlight Units and Panels**
Li-Xuan Chen, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China

6.4: **A Computational Color-Difference Metric to Evaluate the Viewing-Angle Range for FPDs**
Chao Hua Wen, National Taiwan University, Taipei, Taiwan

Session 7: Plasma-Display Technology *(Emissive Displays)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Room 210A
Chair: *Larry F. Weber, Consultant*
Co-Chair: *Ravi P. Rao, Specialty Phopshors, Inc.*

7.1: ***Invited Paper:*** **Characteristics of Pure MgO Powders Added to an MgO Film**
Min Suk Lee, Samnsung SDI Co., Ltd., Chungcheongnam, Korea

7.2: **Fast-Addressing Waveform with Negative-Going Ramp for High-Xe PDP with High-Gamma Cathode Materials**
Ki-Woong Whang, Seoul National University, Seoul, Korea

7.3: **Ultra-Thin Shadow-Mask PDP Fabricated by Vacuum In-line Sealing Technology**
Lanlan Yang, Southeast University, Nanjing, China

7.4: **ACPDPs with Gold Nanorods in the Protecting layer**
Kyung Cheol Choi, KAIST, Daejeon, Korea

7.5: ***Late-News Paper:*** **Development of a 145-in.-Diagonal Super Hi-Vision Plasma-Display Panel**
Keiji Ishii, Japan Broadcasting Corporation (NHK), Tokyo, Japan

Session 8: e-Paper I *(Flexible Displays)*

Tuesday, June 5, 2012 / 10:50 am – 12:10 pm / Room 210B
Chair: *Kevin Gahagan, Corning Incorporated*
Co-Chair: *Jutta Rasp, FPExperts*

8.1: ***Invited Paper:*** **A High-Brightness Electrofluidic Display Film**
Jason Heikenfeld, University of Cincinnati, Cincinnati, OH USA

8.2: **Flexible Electrophoretic Displays Driven by N-Type Organic TFTs**
Wei-Lun Hung, AU Optronics Corp., Hsinchu, Taiwan

8.3: **Transparent Silver Nanowire Film as Pixel Electrode for Flexible Electrophoretic Displays**
Shih-Hao Tseng, AU Optronics Corp., Hsinchu, Taiwan

8.4: **Novel Color Electrophoretic e-Paper Using Independently Movable Colored Particles**
Naoki Hiji, Fuji Xerox Co., Ltd., Kanagawa, Japan

Session 9: Oxide AMOLED Displays *(Active-Matrix Devices)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Ballroom East
Chair: *Hyun Jae Kim, Yonsei University*
Co-Chair: *Kalluri R. Sarma, Honeywell, Inc.*

9.1: **WITHDRAWN**

9.2: **New Threshold-Voltage Compensation Pixel Circuits in 13.5-in. QFHD OLED Display of Crystalline In-Ga-Zn-Oxide FETs**
Toru Tanabe, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

9.3: **A 32-in. AMOLED TV Panel Driven by a-IGZO TFTs**
Tsung Hsiang Shih, AU Optronics Corp., Hsinchu, Taiwan

9.4: ***Late-News Paper:*** **Microscopic Mechanism of the Negative Bias and Illumination Stress Instability of Amorphous-Oxide TFTs**
Yong-Sung Kim, Korea Research Institute of Standards and Science, Daejeon, Korea

Session 10: Blue-Phase Liquid Crystal 2 *(Liquid-Crystal Technology)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Ballroom West
Chair: *Allan R. Kmetz, Consultant*
Co-Chair: *Tatsuo Uchida, Sendai National College of Technology*

10.1: **A Microsecond-Response Blue-Phase Liquid-Crystal Device**
Yuan Chen, University of Central Florida, Orlando, FL USA

10.2: **Dynamic Response of a Polymer-Stabilized Blue-Phase Liquid Crystal**
Jin Yan, University of Central Florida, Orlando, FL USA

10.3: **Polymerization Effect on Electro-Optic Properties of Blue-Phase Liquid Crystals**
Jian Gang Lu, Shanghai Jiao Tong University, Shanghai, China

10.4: **Aerosil-Gels-Dispersed Blue-Phase Liquid Crystals: A New Technique to Control the Electro-Optical Behavior of a Fast-Switching Display**
Jeoung-yeon Hwang, Kent State University, Kent, OH USA

Session 11: Polarization-Based 3D Displays *(3D/Display Systems/Liquid-Crystal Technology)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Room 205AB

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

Co-Chair: *W. Lee Hendrick, Rockwell Collins Optronics*

11.1: **Video-Wall Matrix of Stereoscopic Displays Using a Film Patterened Retarder (FPR)**
Adi Abileah, Planar Systems, Inc., Beaverton, OR USA

11.2: **Fast Ferroelectric Liquid-Crystal Modes for Field-Sequential-Color and 3D Displays**
Vladimir Chigrinov, Hong Kong University of Science & Technology, Kowloon, Hong Kong

11.3: **Stereoscopic 3D Display by Fast-Response Liquid-Crystal Polarization Rotator**
Chung Yung Lee, Hong Kong University of Science & Technology, Kowloon, Hong Kong

11.4: ***Invited Paper:*** **Autostereoscopic Imaging with Simultaneous Reproduction of Two Image Elements in One Display Pixel: General Approach and Experimental Results**
Vasily Alexandrovich Ezhov, A. M. Prokhorov General Physics Institute, Moscow, Russia

Session 12: Advances in 3D Display Characterization *(Display Measuremen/3D)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Room 205C

Chair: *Marja P. Salmimaa, Nokia Research Center*

Co-Chair: *Thomas G. Fiske, Qualcomm MEMS Technologies, Inc.*

12.1: ***Invited Paper:*** **Ergonomic Evaluation of Visual Discomfort with Autostereoscopic Displays**
Takashi Shibata, Waseda University, Saitama, Japan

12.2: **Characterization of 3D Gray-to-Gray Crosstalk with a Matrix of Lightness Differences**
Hans Von Parys, Philips BG TV, Brugge, Belgium

12.3: **Characterizations of 3D TV: Active *vs.* Passive**
Kjell Brunnström, Acreo AB, Kista, Sweden

12.4: **Investigation of Perceptual Gray-to-Gray and 3D Color Crosstalk for Stereoscopic Display**
Sunhee Park, LG Display Co., Ltd., Gyeonggki-do, Korea

12.5: ***Late-News Paper:*** **Binocular Fusion Camera to Render Pixel Detail in 3D Displays**
Edward Kelley, Keltek, Longmont, CO USA

Session 13: CaMgO Protective Layer for Low-Power Plasma Displays *(Emissive Displays)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Room 210A

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

Co-Chair: *Yong Seog Kim, Hongik University*

13.1: ***Invited Paper:*** **Carbonation Reaction of a CaMgO Protective Layer for PDPs**
Yasushi Motoyama, Japan Broadcasting Corporation (NHK), Tokyo, Japan

13.2: **Characteristics of ACPDPs with (Mg,Ca)O Protective Layer Sealed under Reducing Atmosphere**
Yong Seog Kim, Hongik University, Seoul, Korea

13.3: **CaMgO (CMO) Film-Properties Study**
Fangli Xing, Sichuan Shiji Shuanghong Display Device Co., Ltd., Beijing, China

13.4: **Photoluminescent Properties of MgCaO for High-Xe PDPs**
Wenjian Kuang, Southeast University, Nanjing, China

13.5: ***Late-News Paper:*** **Development of MgCaO Protective Layer of PDPs for Decreased Discharge Voltage**
Takehiro Zukawa, Panasonic Plasma Display Co., Ltd., Osaka, Japan

Session 14: e-Paper II *(Flexible Displays)*

Tuesday, June 5, 2012 / 2:00 – 3:20 pm / Room 210B

Chair: *Paul Drzaic, Apple, Inc.*

Co-Chair: *Makoto Omodani, Tokai University*

14.1: **A 13.3-in. 200-dpi Flexible Electrophoretic Display Driven by OTFTs Manufactured Using High-Resolution Offset Printing**
Ryuto Akiyama, Sony Corp., Kanagawa, Japan

14.2: **New Transparent Electrodes for Cholesteric LCDs**
Mark Pellerite, 3M Co., Saint Paul, MN USA

14.3: **Patterned Image Flexible Reflex Displays**
Erica Montbach, Kent Displays, Inc., Kent, OH USA

14.4: **Optimization of Black Color in Electronic Paper Using Cholesteric Liquid Crystals**
Kenichi Ashikawa, Fujitsu Laboratories, Ltd., Kanagawa, Japan

Session 15: AMOLED Displays *(Active-Matrix Devices)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Ballroom East

Chair: *Takatoshi Tsujimura, Konica Minolta Technology Center*

Co-Chair: *Arokia Nathan, University College London*

15.1: **Research, Development, and Application of Crystalline Oxide Semiconductor**
Jun Koyama, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

15.2: **WITHDRAWN**

15.3: **Stabilized AMOLED Displays by Process Tuning and Backplane OLED Compensation**
Reza Chaji, IGNIS Innovation, Inc., Kitchener, Ontario, Canada

15.4: **Backplane Process Technology for AMOLEDs with Bottom-Gate TFTs and Laser Annealing**
Tohru Saitoh, Panasonic Image Devices Development Center, Kyoto, Japan

15.5: ***Late-News Paper:*** **4.0-in. High-Definition AMOLED Panel Employing Simultaneous Emission Driving Method**
Min Koo Han, Seoul National University, Seoul, Korea

Session 16: Blue-Phase Liquid Crystal 3 *(Liquid-Crystal Technology)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Ballroom West

Chair: *Akihiro Mochizuki, I-CORE Technology, LLC*

Co-Chair: *Shunsuke Kobayashi, Tokyo University of Science*

16.1: **Hysteresis-Free Blue-Phase LCDs**
Linghui Rao, University of Central Florida, Orlando, FL USA

16.2: **Crystalline OS-LCD Using Blue-Phase Liquid Crystal Having Characteristic Texture**
Takahiro Yamamoto, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

16.3: **Polarization-Independent and Fast-Response Blue-Phase Liquid-Crystal Lens with a PEDOT:PSS Film**
Yifan Liu, University of Central Florida, Orlando, FL USA

16.4: **Identification of Blue-Phase Liquid Crystal by CIE**
Yi-Fen Lan, AU Optronics Corp., Hsinchu, Taiwan

Session 17: Autostereoscopic 3D Displays I *(3D / Systems)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Room 205AB

Chair: *K. Käläntär, Global Optical Solutions*

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

17.1: ***Invited Paper:*** **Hardware and Software Technologies for Glasses-Free 3D TVs and PCs**
Goh Itoh, Toshiba Corp., Kanagawa, Japan

17.2: **Large-Scale Color Omnidirectional-View 3D Display Based on Projector Array**
Xu Liu, Zhejiang University, Zhejiang, China

17.3: **3D Display Using Active Liquid-Crystal Parallax Barrier with Supersonic Position Detector**
Koji Kusunoki, Semiconductor Energy Laboratory Co.,Ltd., Kanagawa, Japan

17.4: **A Novel Parallax LC Barrier for Temporally Interlaced Autostereoscopic 3D Display**
Yuichi Inoue, Sony Corp., Tokyo, Japan

17.5: **High-Resolution Floating Autostereoscopic 3D Display Based on Iris-Plane-Dividing Technology**
Takahiro Ishinabe, Tohoku University, Sendai, Japan

Session 18: Advanced and 3D Display Applications *(Applications / 3D)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Room 205C

Chair: *Gary W. Jones, Nanoquantum Corp.*

Co-Chair: *Jean-Noel Perbet, THALES Avionics*

18.1: ***Invited Paper:*** **Color-Accurate Monitors**
Adi Abileah, Planar Systems, Inc., Beaverton, OR USA

18.2: **Sensing and Augmented-Reality Technologies for Mobile 3D Platforms**
Chang Yuan, Sharp Laboratories of America, Camas, WA USA

18.3: **3D Metrology System Based on a Bidirectional OLED Microdisplay**
Constanze Grossmann, Fraunhofer IOF, Jena, Germany

18.4: ***Late-News Paper:*** **OLED-Based Binocular Interactive See-Through HMD**
Rigo Herold, Fraunhofer IPMS, Dresden, Germany

18.5: ***Late-News Paper:*** **WUXGA Resolution 3D Stereoscopic Head-Mounted Full-Color AMOLED Microdisplay**
Ilyas Khayrullin, eMagin Corp., Hopewell Junction, NY USA

Session 19: Solid-State-Lighting Applications *(Lighting /Applications)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Room 210A

Chair: *Gerard Rilly, Technicolor Research & Innovation*

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

19.1: ***Invited Paper:*** **From Backlight to Luminaire**

Tim Dekker, Philips Research Laboratories, Eindhoven, The Netherlands

19.2: **Asymmetrical TIR Lens Design for Compact and Coplanar Automotive Daytime Running Lights**
Kuan-Yu Chen, Chilin Technology Co., Ltd., Tainan, Taiwan

19.3: **Multispectral Optimization for Cluster LEDs wtih Wide Operable Range**
Ming Chin Chien, National Chiao Tung University, Hsinchu, Taiwan

Session 20: Flexible TFTs *(Flexible Displays)*

Tuesday, June 5, 2012 / 3:40 – 5:00 pm / Room 210B

Chair: *Douglas Loy, Flexible Display Center, Arizona State University*

Co-Chair: *Shawn O'Rourke, DpiX, LLC*

20.1: ***Invited Paper:*** **Robust TFT Backplane for Flexible AMOLED**
Jin Jang, Kyung Hee University, Seoul, Korea

20.2: ***Invited Paper:*** **Reliability Improvement of Flexible AMOLED Based on Auxiliary Functional Film Technology**
Jang Lin Chen, DTC/ITRI, Hsinchu, Taiwan

20.3: **Organic Passivation Layer for Flexible TFTs**
Chi-Shun Chan, AU Optronics Corp., Hsinchu, Taiwan

20.4: **An 8-in. Oxide-TFT-Driven Flexible AMOLED Display with Solution-Processed Insulators**
Toshihiro Yamamoto, NHK Science & Technology Research Laboratories, Tokyo, Japan

Session 21: OLED Displays I *(OLEDs)*

Wednesday, June 6, 2012 / 9:00 – 10:20 pm / Ballroom East

Chair: *Eric W. Forsythe, Army Research Laboratory*

Co-Chair: *Yasunori Kijima, Sony Corp.*

21.1: **Electron-Transport Layers with Air-Stable Dopants for Display Applications**
Jan Birnstock, Novaled AG, Dresden, Germany

21.2: **A 55-in. FHD OLED TV Employing New Tandem WOLEDs**
Chang-Wook Han, LG Display Co., Ltd., Gyeonggki-do Korea

21.3: **Power-Efficient RGBW AMOLED Displays Incorporating Color-Down-Conversion Layers**
Woo-Young So, Universal Display Corp., Ewing, NJ USA

21.4: ***Late-News Paper:*** **Advanced Circular Polarizer by Using Coatable QWP Technology for Large-sized OLED Display Applications**
Su Hyun Park, LG Display Co., Ltd., Gyeonggki-do, Korea

Session 22: Liquid-Crystal Alignment I *(Liquid-Crystal Technology)*

Wednesday, June 6, 2012 / 9:00 – 10:20 am / Ballroom West

Chair: *Philip Chen, National Chiao Tung University*

Co-Chair: *Yukito Saitoh, FUJIFILM Corp.*

22.1: **Binary Alignment Pattern Induced by Single-Step Exposure of Laser-Beam Polarization Interference**
Tan Li, Hong Kong University of Science & Technology, Kowloon, Hong Kong

22.2: **Variable Liquid-Crystal Pretilt Angle Using Nano-Alignment Surfaces**
Chung Yung Lee, Hong Kong University of Science & Technology, Kowloon, Hong Kong

22.3: **Real Multi-Domain Reduced Color and Gamma Shift in Fringe-Field-Switching (FFS) Mode LCD with Photoalignment Method**
Hung-Yu Wu, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

22.4: **Investigation of Curtain Mura in TFT-TN Panels after COG ACF Process**
Sheng-Ya Wang, National Chiao Tung University, Tainan, Taiwan

Session 23: Autostereoscopic 3D Displays II *(3D / Applications)*

Wednesday, June 6, 2012 / 9:00 – 10:20 am / Room 205AB

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

Co-Chair: *John Rupp, Motorola Solutions Inc.*

23.1: ***Late-News Paper:*** **High-Resolution Time-Multiplexed Backlight with Tracking System for Multi-User-Applicable Wide-Viewing Autostereoscopic LCD**
Che Hsuan Yang, National Chiao Tung University, Hsinchu, Taiwan

23.2: **Design, Fabrication, and Characterization of Multi-View Glasses-Free 3D Displays**
Manoj Nirmal, 3M Co., St. Paul, MN USA

23.3: **Landscape/Portrait Dual-Mode Lens-Type 3D Display Using a 2D Lens Array**
Ching-Tsun Chang, AU Optronic Corp., Hsinchu, Taiwan

23.4: **Hybrid 230-ppi 3D Display Using Time-Sequential OCB-LCD**
Daiichi Suzuki, Toshiba Mobile Displays, Ishikawa, Japan

Session 24: Novel and Emerging Display Applications *(Applications)*

Wednesday, June 6, 2012 / 9:00 – 10:20 am / Room 205C
Chair: *Susan K. Jones, Consultant*
Co-Chair: *Ian Underwood, University of Edinburgh*

24.1: **Detection of Ionizing Radiation by Plasma-Panel Sensors: Cosmic Muons, Ion Beams, and Cancer Therapy**
Peter Friedman, Integrated Sensors LLC, Toledo, OH USA

24.2: **A Novel 5.8-in. Dual-Display Design and Optimization**
Tzu-Ling Niu, AU Optronics Corp., Hsinchu, Taiwan

24.3: **Optical Rewritable Diffraction Grating Made of Photoalignment Materials**
Jiatong Sun, Hong Kong University of Science and Technology, Kowloon, Hong Kong

24.4: ***Late-News Paper:*** **Reflective Display Based-on 1D Photonic-Crystal Color Filter to Enhance Color Reflectivity**
Jung Woo Kim, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea

24.5: ***Late-News Paper:*** **A Novel User Interface for Flexible AMOLEDs**
Chao Chiun Liang, ITRI, Hsinchu, Taiwan

Session 25: Optical Touch Panels *(Touch and Interactive Display / Active-Matrix Devices)*

Wednesday, June 6, 2012 / 9:00– 10:20 am / Room 210A
Chair: *Steven Bathiche, Microsoft*
Co-Chair: *Jerzy Kanicki, University of Michigan*

25.1: **Characteristics of IR Photosensor Using a-SiGe for In-Cell Touch Panels**
Sang Youn Han, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

25.2: **Photosensor TFT Based on Double Metal-Oxide Layer for In-Cell Remote Touch Screen**
Seung-Eon Ahn, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea

25.3: **Flexible In-cell Infrared a-Si Sensor**
Wen-Jen Chiang, ITRI, Hsinchu, Taiwan

Session 26: Flexible-Display Manufacturing *(Flexible Displays / Display Manufacturing)*

Wednesday, June 6, 2012 / 9:00 – 10:20 am / Room 210B
Chair: *Nick Colaneri, Flexible Display Center, Arizona State University*
Co-Chair: *Elliott Schlam, Elliott Schlam Associates*

26.1: ***Invited Paper:*** **Ultra-Slim Flexible Glass Substrates for Display Applications**
Sean Garner, Corning Incorporated, Corning, NY USA

26.2: **Flexible Hybrid Substrates of Roll-to-Roll Manufacturing for Flexible-Display Application**
Yung Hui Yeh, ITRI, Hsinchu, Taiwan

26.3: **Development of Nanoporous Anodic Aluminum Oxide (np-AAO) Thin Template on PET/Ti Flexible Substrate for Flexible LCD Application**
Chitsung Hong, National Tsing Hua University, Hsinchu, Taiwan

26.4: **Transparent Conductive Film Nb_2O_5/Ag/IZO with an Anti-Reflection Design**
Ywh-Tarng Leu, Electronics and Optoelectronics Research Laboratories, Hsinchu, Taiwan

Session 27: OLED Displays II *(OLEDs)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Ballroom East
Chair: *Tariq A. Ali, eMagin Corp.*
Co-Chair: *Jang Hyuk Kwon, Kyung Hee University*

27.1: ***Invited Paper:*** **P-OLED Displays: RGB T95 Lifetime Performance of Ink-Jet-Printed Second-Order Cavity OLED Devices**
Jeremy Burroughes, CDT Ltd., Cambridge, UK

27.2: **High-Definition 458-ppi OLED with Logic Circuit Using Low-Temperature Single-Crystal-Silicon (LTSS) TFT Backplane Driven by 2.5-V Single Power Supply**
Hideto Ohnuma, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

27.3: **Stable White OLED Device for 3D-Compatible Head-Mounted Display**
Emiko Kambe, Sony Corp., Kanagawa, Japan

27.4: **A 13.5-in. QFHD Top-Emission OLED Display Using Crystalline-OS FET**
Shingo Eguchi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 28: Liquid-Crystal Alignment II *(Liquid-Crystal Technology)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Ballroom West
Chair: *Shui Chih Alan Lien,TCL Group*
Co-Chair: *Jenn Jia Su, AU Optronics Corp.*

28.1: **Premium Picture Quality by Super-Multi-Domain Polymer-Sustained Alignment LCD Technology**
Kun-cheng Tien, AU Optronics Corp., Hsinchu, Taiwan

28.2: **Analysis of Two Types of Multi-Domain IPS Viewing-Angle Characteristics**
Shinichi Nishida, NLT Technologies, Ltd., Kawasaki, Japan

28.3: WITHDRAWN

Session 29: LC Lens for 3D *(3D / Liquid-Crystal Technology)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Room 205AB

Chair: *Yasufumi Iimura, Tokyo University of Agriculture & Technology*

Co-Chair: *Gang Xu, Tianma Microelectronics*

29.1: **Overview of Factors Affecting Lens Performance for 3D Displays**
Liwei Li, Kent State University, Kent, OH USA

29.2: **Tunable Polymer Localized Liquid-Crystal Lenses for Autostereoscopic 3D Displays**
Lu Lu, Kent State University, Kent, OH USA

29.3: **Crosstalk Reduction of 3D LCDs Based on the Analysis of LC Graded-Index (GRIN) Lens Factors**
Shinichiro Oka, Hitachi Displays, Ltd., Chiba, Japan

Session 30: Video Processing for 2D/3D *(Display Electronics / 3D)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Room 205C

Chair: *Nikhil Balram, Ricoh Innovations, Inc.*

Co-Chair: *Mainak Biswas, Marvell Semiconductor*

30.1: ***Invited Paper:*** **Cooperation of Video-System Components for Construction of High-Image-Quality Systems**
Taiichiro Kurita, National Institute of Information and Communications Technology, Tokyo, Japan

30.2: **UD-Resolution 240-Hz LCD-TV Display System with High-Speed Driving**
Bong-Hyun You, Seoul National University, Gwanak-gu, Korea

30.3: ***Invited Paper:*** **Improvement of 3D Image Quality by Using High Frame Rate from 3D Cameras to 3D Displays**
Yoshihiko Kuroki, Sony Corp., Kanagawa. Japan

30.4: **Trilateral Filter for Depth-Map Interpolation in 3D Video**
Ilsoon Lim, Samsung Advanced Institute of Technology, Gyeonggi-do, Korea

Session 31: Enabling Technologies for Touch *(Touch and Interactive Displays)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Room 210A

Chair: *Bob Senior, IsiQiri Interface Technologies GmbH*

Co-Chair: *Byeong Koo Kim, LG Display Co., Ltd.*

31.1: ***Invited Paper:*** **Programmable Electrostatic Surface for Tactile Perceptions**
Zoran Radivojevic, Nokia Research Center, Cambridge, UK

31.2: **Eliminating Ghost Touches on a Self-Capacitive Touch Screen**
Philippe Coni, THALES Avionics, le Haillan, France

31.3: **Bare-Finger 3D Touch with Multi-Wavelength Sensing**
Hsuan-He Fang, National Chiao Tung University, Hsinchu, Taiwan

Session 32: Printed Displays and Electronics I *(Printed Displays and Electronic / Flexible Displays)*

Wednesday, June 6, 2012 / 10:40 am – 12:00 pm / Room 210B

Chair: *Jang Lin Chen, DTC/ITRI*

Co-Chair: *Wei Lung Liau, AU Optronics Corp.*

32.1: ***Invited Paper:*** **Printing Technologies for Organic TFT Array for Electronic Paper**
Ryohei Matsubara, Toppan Printing Co., Ltd., Saitama, Japan

32.2: ***Invited Paper:*** **Printable Organic TFT Backplanes for Mass-Produced Displays**
Mark James, Merck Chemicals, Ltd., Southampton, UK

32.3: ***Invited Paper:*** **Large-Area Flexible Organic AMLED Pixel Circuits Driven by Printed Organic Floating-Gate Transistors**
Tsuyoshi Sekitani, University of Tokyo, Tokyo, Japan

32.4: ***Invited Paper:*** **Broad Implications Arising from Novel Photo-Sintering Process and Conductive Inks for Printed Electronics**
Stan Farnsworth, NovaCentrix, Austin, TX USA

Session 33: OLED Devices I *(OLEDs)*

Wednesday, June 6, 2012 / 3:30 – 4:50 pm / Ballroom East

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

Co-Chair: *Denis Y. Kondakov, DuPont Displays*

33.1: ***Invited Paper:*** **A Novel Triplet Green Host System and Charge Balance Tuning for High-Performance Singlet Blue Devices**
Christof Pflumm, Merck KGaA, Frankfurt, Germany

33.2: **Solution-Processed Hole-Injection and Hole-Transport Layers: Design Features for OLED Manufacturing**
Neetu Chopra, Plextronics, Inc., Pittsburgh, PA USA

33.3: **Improved Blue-Phosphorescent OLEDs with a Linearly Graded Mixed-Host Architecture**
Sang Min Lee, University of Rochester, Rochester, NY USA

33.4: **A New Class of Host Materials for Blue-Phosphorescent Organic EL Devices**
Mark Brown, CSIRO Materials Science and Engineering, Clayton, Australia

Session 34: Ferroelectric and Antiferroelecric LC Effects *(Liquid-Crystal Technology)*

Wednesday, June 6, 2012 / 3:30 – 4:50 pm / Ballroom West

Chair: *Michael Wand, LC Vision, LLC*

34.1: **Deformed-Helix Ferroelectric Display with Low Driving Voltage and Fast Response Time**
Qi Guo, Hong Komg University of Science and Technology, Kowloon, Hong Kong

34.2: **Electro-Optical Response of Compensated Helix Ferroelectric: Continuous Gray Scale, Fastest Response, and Lowest Control Voltage Demonstrated to Date**
Igor Kompanets, Lebedev Physical Institute of RAS, Moscow, Russia

34.3: **Fast Orthoconic Antiferroelectric Liquid Crystals for Field-Sequential-Color Applications**
Mattias Wessling, Orhocone AB, Gothenburg, Sweden

Session 35: 3D Lightfield Imaging and Displays *(3D / Display Systems)*

Wednesday, June 6, 2012 / 3:30 – 4:50 pm / Room 205AB

Chair: *Jean-Pierre Guillou, Apple, Inc.*

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

35.1: ***Invited Paper:*** **Envisioning a Light-Field Ecosystem**
Kurt Akeley, Lytro, Mountain View, CA USA

35.2: **Generation Method of Orthoscopic Elemental Image Array from a Sparse Camera Array**
Qiong Hua Wang, Sichuan University, Chendgu, China

35.3: **Computational Photography**
William Freeman, Massachusetts Institute of Technology, Boston, MA USA

Session 36: Image-Quality Enhancement *(Display Electronics)*

Wednesday, June 6, 2012 / 3:30 pm – 4:50 pm / Room 205C

Chair: *Haruhiko Okumura, Toshiba Corp.*

Co-Chair: *Hyoungsik Nam, Kyung Hee University*

36.1: ***Invited Paper:*** **Trends of Future Image-Quality Enhancement with Case Studies**
Jaehee You, Hongik University, Seoul, Korea

36.2: **Enhanced Local Pixel Compensation with Clipping Suppression and Global Luminance Preservation**
Daniel Schafer, Saarland University Campus, Saarbruecken, Germany

36.3: **Adaptive Denoising Based on Image Region Analysis**
Sung In Cho, Pohang University of Science and Technology, Pohang, Korea

36.4: **Subjective and Objective Visual-Quality Evaluation of 4K Video Using AVC and HEVC Compression**
Sachin Deshpande, Sharp Laboratories of America, Camas, WA USA

Session 37: Projected-Capacitive Touch Panels *(Touch and Interactive Displays)*

Wednesday, June 6, 2012 / 3:30 – 4:50 pm / Room 210A

Chair: *Jefferson Han, Perceptive Pixel*

Co-Chair: *Joo Hyung Lee, Samsung Mobile Display*

37.1: **An In-Cell-Capable Capacitive Touch-Screen Controller with 41-dB SNR and Integrated Display Driver IC for 480 x 864 LTPS Displays**
Murat Ozbas, Synaptics, Inc., Rochester, NY USA

37.2: **A 10.4-in. On-Cell Touch-Panel LCD with Correlated Noise Subtraction Method**
Hiroshi Haga, NLT Technologies, Ltd., Kanagawa, Japan

37.3: **A 10-Touch Capacitive-Touch Sensor Circuit with the Time-Domain Input-Node Isolation.**
Jae-seung Lee, Pohang University of Science and Technology, Gyeonggi-do, Korea

Session 38: Printed Displays and Electronics II *(Printed Displays and Electronics/Flexible Displays)*

Wednesday, June 6, 2012 / 3:30 – 4:50 pm / Room 210B

Chair: *Jin Jang, Kyung Hee University*

Co-Chair: *Ruiqing Ma, Universal Display Corp.*

38.1: **Highly Thermally Stable OFETs Fabricated with Liquid-Crystalline Organic Semiconductors**
Hiroaki Iino, Tokyo Institute of Technology, Yokohama, Japan

38.2: **Color Filters on a Flexible Glass Substrate Fabricated by Roll-to-Roll Processing**
Takayoshi Nirengi, Dai Nippon Pinting Co., Ltd., Chiba, Japan

38.3: ***Invited Paper:*** **Ink-Jet Printing for Industrial Printed Electronics and Material Deposition for Micro-Fabrication Applications**
Martin Schoeppler, FUJIFILM Dimatix, Inc., Santa Clara, CA USA

38.4 **A 6-in. Rollable Active-Matrix Electrophoretic Display Driven by Organic TFTs**
Chin-Yang Liu, AU Optronics Corp., Hsinchu, Taiwan

Session 39: OLED Devices II *(OLEDs)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Ballroom East

Chair: *Sven Murano, Novaled AG*

Co-Chair: *Chang Hee Lee, Seoul National University*

39.1: ***Invited Paper:*** **Efficient Color-Tunable Light Sources Using a Combination of Transparent and Non-Transparent OLEDs**
Jeong Ik Lee, ETRI, Daejeon, Korea

39.2: **Full Integration of Transflective Hybrid Device Consisting of PDLC, OLEDs, and OPV**
Wei-Fu Chang, Yuan Ze University, New Taipei, Taiwan

39.3: **A Mirror Display Based on AMOLEDs and Transflective Mirror Designs**
Hsing-Hung Hsieh, AU Optronics Corp., Hsinchu, Taiwan

39.4: **Dual Efficiency Enhancement by Delayed Fluorescence and Dipole Orientation in High-Efficiency Fluorescent OLEDs**
Jongwook Park, Catholic University of Korea, Gyeonggi-do, Korea

Session 40: Cholesteric LCDs *(Liquid-Crystal Technology)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Ballroom West

Chair: *Birendra Bahadur, Rockwell Collins*

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

40.1: ***Invited Paper:*** **Ultrafast High-Optical-Contrast Flexoelectric Displays for Video Frame Rates**
Harry Coles, University of Cambridge, Cambridge, UK

40.2: **Novel Phototunable Chiral Materials for Single-Layered Color Cholesteric Display**
Chih-Lung Chin, ITRI, Hsinchu, Taiwan

40.3: **Dual-Mode Reflective Cholesteric Display**
Rafael Zola, Kent State University, Kent, OH USA

40.4: **Generation of Uniform and Multitude Gray Scales on Cholesteric LCD by Using a Fast Low-Voltage Driving Scheme**
Qiang Fu, Saarland University, Saarbruecken, Saarland, Germany

Session 41: Solid-State Lighting I *(Lighting)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Room 205AB

Chair: *Mike Hack, Universal Display Corp.*

Co-Chair: *Takatoshi Tsujimura, Konica Minolta Technology Center*

41.1: ***Invited Paper:*** **Embracing Variability: Color Consistency of LED-Based Solutions**
Benoit Bataillou, Philips, Miribel, France

41.2: ***Invited Paper:*** **Phosphor Mixtures for White LEDs**
Holger Winkler, Merck KGaA, Darmstadt, Germany

41.3: **Printed Inorganic LEDs for Solid-State Lighting**
William Ray, Nth Degree Technologies, Tempe, AZ USA

41.4: **Daylight Matching with Blended-CCT LED Lamp**
Michael Miller, Air Force Institute of Technology, Xenia, OH USA

Session 42: Intra-Panel Interface *(Display Electronics)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Room 205C

Chair: *Taesung Kim, Apple, Inc.*

Co-Chair: *Ya Hsiang Tai, National Chuao Tung University*

42.1: **A 1.4-Gbps Intra-Panel Interface for Chip-on-Glass TFT-LCD Applications**
Dongmyung Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

42.2: **LCD-TV System with 2.8-Gbps/lane Intra-Panel Interface for 3D-TV Applications**
Jin Ho Kim, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

42.3: **A 720-Channel Source Driver with a 2.5-Gbps Point-to-Point Interface**
Hui-Wen Miao, Raydium Semiconductor Corp., Hsinchu, Taiwan

42.4: **The Integrated-Stream Protocol (iSP) Interface wtih Clock-Embedded Scheme for Next-Generation TFT-LCD Applications**
Rong Chang, AU Optronics Corp., Hsinchu, Taiwan

Session 43: Driving Methods for Low-Power Displays *(Green Technology)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Room 210A

Chair: *Rashmi Rao, Qualcomm MEMS Technologies*

43.1: **Low-Power Display System Driven by Utilizing a Technique Using Crystalline IGZO Transistor**
Tatsuji Nishijima, Semiconductor Energy Laboratory Co.,Ltd., Kanagawa, Japan

43.2: **Energy and Area-Efficient Driving Scheme in Cholesteric LCD by Embedded Fully Symmetric Self-Biased Switched Capacitor**
Ke-Horng Chen, National Chiao Tung University, Hsinchu, Taiwan

43.3: **Intensity Modulation of Light Sources for Gray Scales in Projection Displays**
T. N. Ruckmongathan, Raman Research Institute, Bangalore, India

Session 44: Display Manufacturing: Flexible Processes *(Display Manufacturing / Flexible Displays)*

Thursday, June 7, 2012 / 9:00 – 10:20 am / Room 210B

Chair: *Elliott Schlam, Elliott Schlam Associates*

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

44.1: **High-Transmission Optically Matched Conductive Film with Sub-Wavelength Nano-Structures**
Kazuya Hayashibe, Sony Corp., Tokyo, Japan

44.2: **Broadband Anti-Reflection Film Produced by Roll-to-Roll Process**
Shunsuke Suzuki, Sumitomo 3M, Ltd., Kanagawa, Japan

44.4: **Flexible LCDs Fabricated with a Slit Coater**
Munehiro Kimura, Nagaoka University of Technology, Niigata, Japan

44.5: **Roll-to-Roll UV Embossing-Process-Based Sub-Wavelength Gratings for Backlights**
Chun-Wei Liu, National Tsing Hua University, Hsinchu, Taiwan

Session 45: Solid-State Lighting II *(OLED / Lighting)*

Thursday, June 7, 2012 / 10:40 – 12:00 pm / Ballroom East

Chair: *Cheng Chen, Apple, Inc.*

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

45.1: ***Invited Paper:*** **Commercialization of World's First All-Phosphorescent OLED Product for Lighting Application**
Takatoshi Tsujimura, Konica Minolta Technology Center, Tokyo, Japan

45.2: ***Invited Paper:*** **Extremely High-Performance White OLEDs for Lighting**
Takuya Kamoda, Panasonic Electric Works Co., Ltd., Japan

45.3: **Efficient Phosphorescent OLEDs for Warm-White and Cool-White Lighting Applications**
Xin Xu, Universal Display Corp., Trenton, NJ USA

Session 46: Novel Non-Emissive Displays *(Liquid-Crystal Technology)*

Thursday, June 7, 2012 / 10:40 – 2:00 pm / Ballroom West

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

Co-Chair: *Cheng Chen, Apple, Inc.*

46.1: ***Invited Paper:*** **Aperture-Variable Pixels for Optical Switches and Displays**
Hongwen Ren, University of Central Florida, Orlando, FL USA

46.2: **A Novel Color Display Based on Voltage-Stretchable Liquid-Crystal Droplet**
Su Xu, University of Central Florida, Orlando, FL USA

46.3: **Hysteresis-Free Pixel Switching of Electrowetting Displays**
Paul Vermeulen, Samsung LCD Netherlands R&D Center, Eindhoven, The Netherlands

Session 47: 3D and Multiview Projection *(3D / Projection)*

Thursday, June 7, 2012 / 10:40 – 12:00 pm / Room 205AB

Chair: *Frederic J. Kahn, Kahn International*

Co-Chair: *Matthew S. Brennesholtz, Insight Media*

47.1: ***Invited Paper:*** **3D Digital Cinema Technologies**
Miller Schuck, RealD, Boulder, CO USA

47.2: **A Multi-View Display Using a Single Projector and Screen**
Senshi Nasu, Sendai National Colleges of Technology, Sendai, Japan

47.3: **Color-Separation 3D in a Laser Projection System Using a 2D MEMS Scanner**
JungHoon Seo, LG Electronics, Co., Ltd., Seoul, Korea

47.4: ***Invited Paper:*** **3D Displays Using Scanning Laser Projection**
Brian Schowengerdt, University of Washington, Seattle, WA USA

Session 48: Display Driving Techniques *(Display Electronics)*

Thursday, June 7, 2012 / 10:40 – 12:00 pm / Room 205C

Chair: *Richard McCartney, National Semiconductor*

Co-Chair: *Seung Woo Lee, Kyung Hee University*

48.1: ***Invited Paper:*** **Panel Self-Refresh Technology: Decoupling Image Update from LCD Panel Refresh in Mobile Computing Systems**
Achin Bhowmik, Intel Corp., Santa Clara, CA USA

48.2: **A Novel Current-Mode Driving Technique for Real-Time Image Compensation in AMOLED Displays**
Jun-Hyeok Yang, KAIST, Daejeon, Korea

48.3: **Development of High-Performance Driving Scheme for Color Cholesteric LCDs**
Hirokata Uehara, Fujitsu Laboratories, Ltd., Kanagawa, Japan

48.4: ***Invited Paper:*** **Driving Circuit Integration Using Depletion-Mode Oxide TFTs**
KeeChan Park,Konkuk University, Seoul, Korea

Session 49: Low-Power Displays and Materials *(Green Technology)*

Thursday, June 7, 2012 / 10:40 – 12:00 pm / Room 210A

Chair: *Rashmi Rao, Qualcomm MEMS Technologies*

49.1: ***Invited Paper:*** **Low-Power High-Color-Gamut PenTile RGBCW Hybrid FSC-LCD**
Candice Brown Elliott, Nouvoyance, Sebastopol, CA USA

49.2: **Greener Displays through Integrated Optics: Display Backlights Using One Film**
John Wheatley, 3M Co., Saint Paul, MN USA

49.3: **Synthesis of High-Quality CdSe Quantum Dots with Tunable Size**
Wang Chun, BOE Technology Co., Ltd, Hefei, China

Session 50: Display Manufacturing: Lamination & Testing *(Display Manufacturing)*

Thursday, June 7, 2012 / 10:40 – 12:00 pm / Room 210B

Chair: *Ion Bita, Qualcomm MEMS Technologies*

Co-Chair: *Bradley Bowden, Corning Incorporated*

50.1: ***Invited Paper:*** **Optical Bonding: Critical Technical Challenges for Performance, Manufacturing, and Supply Chain**
Dan Doyle, TOCA Technology, Inc., Mesa, AZ USA

50.2: **Identify the Failure Criteria of Touch-Panel Glass in Ball-Drop Test**
Mao Hsing Lin, Chimei Innolux Corp., Tainan, Taiwan

50.3: **Finite-Element Analysis of Ball Drop on LCD Panels**
K. Hemanth Vepakomma, Corning Incorporated, Corning, NY USA

50.4: **Analysis of Gravity Mura under Thermal Expansion of LCD Cells**
Jen-Chieh Li, National Taiwan University, Taipei, Taiwan

Session 51: Solid-State Lighting III *(OLED / Lighting)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Ballroom East

Chair: *Michael Weaver, Universal Display Corp.*

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

51.1: ***Invited Paper:*** **Optical Design of Enhanced Light-Extraction Efficiency in Multi-Stacked OLEDs Coupled with a High-Refractive-Index Medium and Back-Cavity Structure**
Akiyoshi Mikami, Kanazawa Institute of Technology, Ishikawa, Japan

51.2: **Outcoupling Enhancement Mechanism Investigation on Highly Efficient PIN OLEDs Using Crystallizing-Evaporation-Processed Organic Outcoupling Layers**
Sven Murano, Novaled AG, Dresden, Germany

51.3: **Top-Emitting OLEDs for Solid-State Lighting: High Efficiency by Optical Modelling**
Bjorn Lussem, TU Dresden, Dresden, Germany

51.4: **High-Efficiency White OLEDs with Built-Up Outcoupling Substrate**
Kazuyuki Yamae, Panasonic Electric Works Co., Ltd., Osaka, Japan

Session 52: Electrophoretic Displays *(Active-Matrix Devices)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Ballroom West

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

Co-Chair: *Makoto Ohkura, Hitachi Displays, Ltd.*

52.1: **Transparent AMOLED and Its Integration with an Electrophoretic Display**
Hsing-Hung Hsieh, AU Optronics Corp., Hsinchu, Taiwan

52.2: **A Backplane Fabricated by Evaporation Printing for the Production of a Cost-Competitive Electrophoretic e-Paper Display**
Charles Harrigal, Advantech US, Inc, Pittsburgh, PA USA

52.3: **A Prototype System-on-Glass 4-in. WVGA Electrophoretic Display**
P. S. Kuo, AU Optronics Corp., Hsinchu, Taiwan

52.4: ***Late-News Paper:*** **Ultra-Low-Power Color Reflective Display**
Brad Benson, Hewlett-Packard, Corvallis, OR USA

Session 53: Lens Design for 3D Displays *(3D / Display Systems)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Room 205AB

Chair: *K. Käläntär, Global Optical Solutions*

Co-Chair: *W. Lee Hendrick, Rockwell Collins Optronics*

53.1: **A Rotatable RBGW 3D Display**
Pei-Lin Hsieh, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

53.2: **A Mobile 3D System of OLED Panel with a Dual-Direction LCL Lens**
Paul C.-P. Chao, National Chiao Tung University, Hsinchu, Taiwan

53.3: **A Shifting Holographic Fabrication for Switchable LC/Polymer Fresnel Lens**
Jian Gang Lu, Shanghai Jiao Tong University, Shanghai, China

Session 54: Color *(Applied Vision)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Room 205C

Chair: *Louis D. Silverstein, VCD Sciences, Inc.*

Co-Chair: *Senfar Wen, Yuan Ze University*

54.1: **Color Prediction in an LCD Using RGB-LED Backlights**
Seo Young Choi, Samsung Advanced Institute of Technology, Yongin, Korea

54.2: **Investigation of Chromaticity Discrimination Ellipses for Displays**
Senfar Wen, Yuan Ze University, Chung-Li, Taiwan

54.3: **Novel Real-Time and Bi-Directional Color Simulator for Dichromacy and Trichromacy on Smartphones**
Sakuichi Ohtsuka, Kagoshima University, Kagoshima, Japan

54.4: **Binocular Color-Rivalry Thresholds of Complex Images**
Pei-Li Sun, National Taiwan University of Science and Technology, Taipei, Taiwan

Session 55: Green Optics for Display Systems *(Display Systems / Green Technology)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Room 210A

Chair: *Masaru Suzuki, SKC Haas Display Films*

Co-Chair: *Jean-Pierre Guillou, Apple, Inc.*

55.1: ***Invited Paper:*** **A Novel LCD Structure Using Transparent Polymers Free of Birefringence and Scattering Polymers Free of Wavelength Dependency**
Akihiro Tagaya, Keio University, Kawasaki, Japan

55.2: **Shaping Arbitrary Angular Luminance Distribution through Directional LGP and Single Inverted-Concave Lenticular Film for Blue-Phase LCD BLU Hybrid Structure**
K Käläntär, Global Optical Solutions, Tokyo, Japan

55.3: **Development of a 65-in. Color-Filter-Less LCD and Stencil-LPD Method for High-Quality 120-Hz Two-Field Displays**
Chi Wen Chang, National Chiao Tung University, Hsinchu, Taiwan

55.4: **Pixelized Backlight with Polarization Recycling for LCDs**
Chun-Ruei Yang, National Tsing Hua University, Hsinchu, Taiwan

55.5: ***Late-News Paper:*** **A Theoretical Consideration of a Flat Panel Display Based on Integrated Optical Devices**
Hyungseok Pang, LG Display Co., Ltd., Gyeonggi-do, Korea

Session 56: Display Manufacturing: Oxide TFTs *(Display Manufacturing / Active-Matrix Devices)*

Thursday, June 7, 2012 / 1:30 – 2:50 pm / Room 210B

Chair: *Fan Luo, AU Optronics Corp.*

Co-Chair: *Roger G. Stewart, Sourland Mountain Associates*

56.1: ***Invited Paper:*** **Manufacturing Issues for Oxide TFT Technologies for Large-Sized AMOLED Displays**
Toshiaki Arai, Sony Corp., Kanagawa, Japan

56.2: **Deposition of a-InGaZnOx by Rotation Magnet Sputtering**
Akihiko Hiroe, Tokyo Electron, Ltd., Nirasaki City, Japan

56.3: **Ultra-Flexible a-IGZO TFT**
Zingway Pei, National Chung Hsing University, Taichung, Taiwan

56.4: **Dual-Gate IGZO TFT for Threshold-Voltage Compensation in AMOLED Pixel Circuits**
Lu Sheng Chou, National Chiao Tung University, Hsinchu, Taiwan

Session 57: Solid-State Lighting IV *(OLED / Lighting)*

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Ballroom East

Chair: *Yasunori Kijima, Sony Corp.*

Co-Chair: *Sven Murano, Novaled AG*

57.1: ***Invited Paper:*** **Flexible OLEDs for Lighting Applications**
Ruiqing Ma, Universal Display Corp., Ewing, NJ USA

57.2: ***Invited Paper:*** **White OLEDs for General Lighting**
Junji Kido, Yamagata University, Yamagata, Japan

57.3: ***Invited Paper:*** **Host- and Charge-Transport Materials for High-Efficiency Deep-Blue-Phosphorescent OLEDs**
Jun Yeob Lee, Dankook University, Gyeonggi-do, Korea

Session 58: High-Resolution TVs *(Active-Matrix Devices)*

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Ballroom West

Chair: *Roger G. Stewart, Sourland Mountain Associates*

Co-Chair: *Chin Hsin (Fred) Chen, National Chaio Tung University*

58.1: **Development of Super Hi-Vision 8K x 4K Direct-View LCD for Next-Generation TV**
Takeshi Kumakura, Sharp Corp., Nara, Japan

58.2: **Implementation of 240-Hz 55-in. Ultra-Definition LCD Driven by Oxide-Semiconductor TFTs with Copper Signal Lines**
Namyong Gong, LG Display Co., Ltd., Gyeonggi-do, Korea

58.3: **Pixel Design for Improved 3D TV with One-Dimensional Integral-Imaging Method**
Rieko Fukushima, Toshiba Corp., Kawasaki, Japan

Session 59: Volumetric, Lightfield, and Holographic Displays *(3D / Display Systems)*

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Room 205AB

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

Co-Chair: *K. Käläntär, Global Optical Solutions*

59.1: **A 3D Volumetric Display Using a Rim-Driven Varifocal Beamsplitter and High-Speed DLP Backlit LCD**
Lanny Smoot, Disney Research, Glendale, CA USA

59.2: **Three-Dimensional Floating Light-Field Display Based on Spliced Multi-LCDs**
Haifeng Li, Zhejiang University, Hangzhou, China

59.3: **Fast Hologram Pattern Generation by Removing Concentric Redundancy**
Seok Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

59.4: **Real-Time Dynamic Holographic Display Based on a Liquid-Crystal Thin Film**
Hongyue Gao, Virginia Tech, Blacksburg, VA USA

59.5: ***Invited Paper:*** **Visual Perception and Holographic Displays**
James Barabas, MIT Media Lab, Cambridge, MA USA

Session 60: Image Quality and Viewing Experience *(Applied Vision)*

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Room 205C

Chair: *Tom Kimpe, BARCO Medical Imaging Division*

Co-Chair: *Sakuichi Ohtsuka, Kagoshima University*

60.1: **Control of Subjective Depth by Quantified Monocular Depth Cues of Contrast and Spatial Frequencies**
Yasuhide Hyodo, Sony Corp., Tokyo, Japan

60.2: **Minimizing Veiling-Glare Degradation in the High-Luminance-Range Visualization of Medical Images**
Aldo Badano, FDA, Silver Spring, MD USA

60.3: **Investigation on Viewing-Angle Requirements and Glare with Respect to Size of Flat-Panel TV Displays**
Youichi Igarashi, Panasonic Liquid Crystal Display Co., Ltd., Chiba, Japan

Session 61: Cool Lasers for Projection *(Projection)*

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Room 210A

Chair: *David A. Eccles, Rockwell Collins*

Co-Chair: *Ming Hsien Wu, Hamamatsu Corp*

61.1: **Watt-Level Compact Green-Laser Module for a Laser Display**
Chang-Qing Xu, McMaster University, Hamilton, Ontario, Canada

61.2: **Cooling Design of High-Power-Laser Diode Array Using Duct Flow and Vapor Chamber Method**
Kuan-Yu Chen, Chilin Technology Co., Ltd., Tainan, Taiwan

61.3: **Simulation and Measurement of Laser Speckle and Speckle Contrast**
Wei-Feng Hsu, National Taipei University of Technology, Taipei, Taiwan

61.4: **Wavelength Selection for Lasers and LEDs in Projection Systems**
Matthew Brennesholtz, Insight Media, Norwalk, CT USA

Session 62: Display Manufacturing: Novel Devices & Green Technology
(Display Manufacturing/Green Technology)

Thursday, June 7, 2012 / 3:10 – 4:30 pm / Room 210B

Chair: *Toshiaki Arai, Sony Corp.*

Co-Chair: *Fan Luo, AU Optronics Corp.*

62.1: ***Invited Paper:*** **Fluorinated Compounds Emission Reduction Activity of WLICC (World LCD Industry Cooperation Committee)**
Makoto Ohkura, Hitachi Displays, Ltd., Fuchu, Japan

62.2: **Pixel-Controlling Substrate Fabricated by Embedding Millions of Silicon IC Chips on Plastic Substrate and Self-Aligned Metal Interconnection Among Such IC Chips**
Kieu Nguyen, Japan Advanced Institute of Science and Technology, Nomi, Japan

62.3: **Production Considerations for Bistable D3 Electrowetting Displays**
Frank Bartels, Advanced Display Technology, Dortmund, Germany

62.4: **The Structure and Manufacturing Process of Large-Area Transparent Electrowetting Display**
Yun-Sheng Ku, ITRI, Hsinchu, Taiwan

Session 63: FED and Emissive Devices *(Emissive Displays)*

Friday, June 8, 2012 / 9:00 – 10:20 am / Ballroom East

Chair: *Soichiro Okuda, Okuda Engineering*

Co-Chair: *Hsing-Yao Chen, Chunghwa Picture Tubes, Ltd.*

63.1: ***Invited Paper:*** **Sharp, Uniform, Stable, and Environmently Hard Transfer-Mold Field-Emitter Arrays**
Masayuki Nakamoto, Shizuoka University, Hamamatsu, Japan

63.2: **Field-Emission Display with Homogenized Carbon-Nanotube Emitters Grown by Resist-Assisted Patterning Process**
Kyu Chang Park, Kyung Hee University, Seoul, Korea

63.3: **Enhanced Cathodoluminescence of a Double Layer of Two Phosphors**
Daniel Den Engelsen, Brunel University, Geldrop, The Netherlands

63.4: **Extraction of the Location and the Energy Level of the Trap Using Random Telegraph Noise in GaN-Based LEDs**
Jungjin Park, Seoul National University, Seoul, Korea

Session 64: High-Performance Mobile Displays *(Active-Matrix Devices)*

Friday, June 8, 2012 / 9:00 – 10:20 am / Ballroom West

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

Co-Chair: *James Chang, Apple, Inc.*

64.1: ***Invited Paper:*** **Ultra-High-Resolution Mobile Displays**
Tetsuya Kawamura, Toshiba Mobile Display Co. Ltd., Saitama, Japan

64.2: **WITHDRAWN**

64.3: **High-Transmittance Slim-Border 720p a-Si TFT-LCD for Mobile-Display Applications**
Wu-Liu Tsai, AU Optronics Corp., Hsinchu, USA

64.4: **Submicron Pixel Electrode Structure in IPS Mode**
Joon Young Yang, LG Display Co., Ltd., Gyeonggi-do, Korea

Session 65: 3D Comfort *(3D / Applied Vision)*

Friday, June 8, 2012 / 9:00 – 10:20 am / Room 205AB

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

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

65.1: **Effective Spatial Resolution of Temporally and Spatially Interlaced Stereo 3D Televisions**
Martin Banks, University of California, Berkeley, Berkeley, CA USA

65.2: **Effect of Viewing Region Satisfying Super Multi-View Condition in Integral Imaging**
Byoungho Lee, Seoul National University, Seoul, Korea

65.3: **An Ergonomic Evaluation of Stereoscopic and Deadzone-Free Autostereoscopic 3D Displays**
Wei-Cheng Chao, AU Optronics Corp., Hsinchu, Taiwan

65.4: **Eye-Fatigue Measurement for 3D Displays**
Yueh-Yi Lai, ITRI, Hsinchu, Taiwan

Session 66: Novel Backlights *(Display System / Lighting)*

Friday, June 8, 2012 / 9:00 – 10:20 / Room 205C

Chair: *Wei Chen, Apple, Inc.*

Co-Chair: *K. Käläntär, Global Optical Solutions*

66.1: **A High-Efficiency Wide-Color-Gamut Solid-State Backlight System for LCDs Using Quantum-Dot Enhancement Film**

Jian Chen, Nanosys, Palo Alto, CA USA

66.2: **Optimization of LED Arrangement for Extending LED Binning Range in Backlight System**
Ping-Yen Chou, National Chiao Tung University, Hsinchu, Taiwan

66.3: **Design of Color Backlight for High-Efficiency Display Using Optical Waveguide Gratings**
Tong Zhang, Southeast University, Nanjing, China

66.4: **High-Contrast Edge-Lit Frontlight Solution for Reflective Displays**
Ion Bita, Qualcomm MEMS Technologies, San Jose, CA USA

Session 67: Optical Components for Projection *(Projection)*

Friday, June 8, 2012 / 9:00 – 10:20 am / Room 210A

Chair: *Alan Sobel, Flatscreen Technologies Corp.*

Co-Chair: *Cheng-Huan Chen, National Tsing-Hua University*

67.1: **Ultra-Short-Throw Pico-Projector Including Two Plastic Prisms and A Convex Aspheric Mirror**
Dong Hi Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

67.2: **Distortion Correction Using a Freeform Lens for Projection onto a Non-Planar Surface**
Haifeng Li, Zhejiang University, Hangzhou, China

67.3: **LCOS Using a Fringe-Field Color Filter**
Yuet-Wing Li, Himax Display, Inc., Tainan, Taiwan

67.4: **Submillisecond-Response Blue-Phase Liquid Crystal for Color-Sequential Projection Displays**
Sihui He, University of Central Florida, Orlando, FL USA

Session 68: Display Manufacturing: Fabrication Processes and Solid-State Lighting *(Display Manufacturing / Lighting)*

Friday, June 8, 2012 / 9:00 – 10:20 am / Room 210B

Chair: *Greg Gibson, FAS Holdings Group*

Co-Chair: *Tian Xiao, CBRITE, Inc.*

68.1: **Novel Light-Scattering Glass Substrate for the Enhancement of OLED Lighting Outcoupling Efficiency**
Naoya Wada, Asahi Glass Co., Ltd., Yokohama, Japan

68.2: **Lowering the Cost for OLED Lighting Manufacturing**
Heike Landgraf, Applied Materials, Alzenau, Germany

68.3: **Printed Conformal Interconnects to HB-LED Die on Three-Dimensional Surfaces Using Aerosol Jet Technology**
Kurt Christenson, Optomec, Saint Paul, MN, USA

68.4: ***Late-News Paper:*** **High-Resolution Printing of OLED Displays**
Makoto Ando, Sony Corp., Kanagawa, Japan

Session 69: Lighting Devices *(Emissive Displays)*

Friday, June 8, 2012 / 10:40 am – 12:00 pm / Ballroom East

Chair: *Ryuichi Murai, AVC Devices Development Center / Panasonic*

Co-Chair: *Harm Tolner, Tolner Technology*

69.1: ***Invited Paper:*** **Recent Developments in LED Phosphors for Lighting and Display Applications**
Ravi Rao, Specialty Phopshors, Inc., Cupertino, CA USA

69.2: **WITHDRAWN**

69.3: ***Invited Paper:*** **Current Issues in Quantum-Dot Phosphors for LEDs**
Duk Young Jeon, KAIST, Daejeon, Korea

Session 70: Novel Display Devices *(Active-Matrix Devices)*

Friday, June 8, 2012 / 10:40 am – 12:00 pm / Ballroom West

Chair: *Russel A. Martin, Qualcomm MEMS Technologies*

Co-Chair: *Hugo L. Steemers, Pixel Qi*

70.1: **Touch-Interactive High-Power-Efficiency AMOLED Display with Energy Recycling and Self-Calibration Capabilities**
Reza Chaji, IGNIS Innovation, Inc., Kitchener, Ontario, Canada

70.2: **Impact of Gate Oxide Thickness and Channel Length on Junction-Less Poly-Si TFTs**
Horng Chih Lin, National Chiao Tung University, Hsinchu, Taiwan

70.3: **High-Performance and Low-Temperature Process n-Channel Organic TFT and Its Applications**
Shin-Chuan Chiang, Chunghwa Picture Tubes, Ltd., Hsinchu, Taiwan

70.4: ***Late-News Paper:*** **0.5-in. XGA Micro-OLED Display on Silicon Backplane with High-Definition Technologies**
Yusuke Onoyama, Sony Corp., Kanagawa, Japan

Session 71: 3D Perception *(3D / Applied Vision)*

Friday, June 8, 2012 / 10:40 am – 12:00 pm / Room 205AB

Chair: *Jennifer Gille, Qualcomm MEMS Technologies*
Co-Chair: *Martin Banks, University of California, Berkeley*

71.1: ***Invited Paper:*** **Front-of-Screen Performance Comparison of Various Multi-View Autostereoscopic 3D Display Technologies**
Erno Langendijk, Philips CL-BG TV Innovation Site Eindhoven, Eindhoven, The Netherlands

71.2: **3D Looks More Real and Is Funny: Comparing the Children's and Adults' 3D-Related Experiences**
Viljakaisa Aaltonen, Nokia Research Center, Tempre, Finland

71.3: **Study on Reducing the Cardboard Effect for Natural Perception Using Adaptive Disparity Mapping**
Nao Shibuhisa, Sharp Corp., Chiba, Japan

71.4: **A Simulation Method of Time-Sequential Stereoscopic Effect with Various LC Response Speed on Motion Pictures**
Chia-Chiang Lin, Shenzhen China Star Optoelectronics Technology Co., Ltd., Guangdong, China

Session 72: Head-Up and Direct-View Laser Phosphors Displays *(Projection / Display Systems)*

Friday, June 8, 2012 / 10:40 am – 12:00 pm / Room 210A
Chair: *Sergei Yakovenko, LensVector, Inc.*
Co-Chair: *Fujio Okumura, NEC Corporation*

72.1: **Compact and High-Efficiency Head-Up Display for Vehicle Application**
Wen-Wei Yang, National Tsing Hua University, Hsinchu, Taiwan

72.2: **Depth Perception Effects of a Monocular Heads-Up-Display on a Moving Automobile Under Real-Space Condition**
Takashi Sasaki, Toshiba Corp., Kawasaki, Japan

72.3: **A Rear-Projection-Type Laser Phosphor Display with a High-Reflection Wide-Scan-Angle Scanner**
Osamu Ishibashi, NEC Corp., Kanagawa, Japan

72.4: ***Late-News Paper:*** **Micro-Mirror System-Level Synchronization Notes**
Sharon Hornstein, Maradin Technologies, Ltd., Pardes Hanna, Israel

72.5: ***Late-News Paper:*** **Introducing Scalable, Freeform, Immersive, High-Definition Laser Phosphor Displays**
Roger Hajjar, Prysm, Inc., San Jose, CA USA

Session 73: Display Manufacturing: Substrates *(Display Manufacturing)*

Friday, June 8, 2012 / 10:40 am – 12:00 pm / Room 210B
Chair: *Bradley Bowden, Corning Incorporated*
Co-Chair: *Don Carkner, Research in Motion*

73.1: **Role of Glass in Manufacturing: The Next Generation of Advanced Displays**
Peter Bocko, Corning Incorporated, Corning, NY USA

73.2: **A 3D Cover Glass for Mobile Devices**
Prakash Panda, Corning Incorporated, Corning, NY USA

73.3: ***Invited Paper:*** **Four-Point Bending of AMLCD Panel**
Jamie Westbrook, Corning Incorporated, Corning, NY USA

Session 74: Late-News Session: Flexible Displays *(Flexible)*

Thursday, June 7, 2012 / 10:40 am – 12:00 pm / Room 210C
Chair: *Deng-Ke Yang, Kent State University.*
Co-Chair: *Robert Zehner, Lab126*

74.1: ***Late-News Paper:*** **Oxide TFTs and Color-Filter-Array Technology for Flexible Top-Emission White OLED Display**
Makoto Noda, Sony Corp., Kanagawa, Japan

74.2: ***Late-News Paper:*** **11.7-in. Flexible AMOLED Display Driven by a-IGZO TFTs on Plastic Substrate**
Hajime Yamaguchi, Toshiba Corp., Kanagawa, Japan

74.3: ***Late-News Paper:*** **Flexible Color Active-Matrix EP Display Using Low Distortion OTFT Backplanes**
Paul Cain, Plastic Logic, Ltd., Cambridge, UK

Session 75: Late-News Session: Projection Displays *(Projection)*

Thursday, June 7, 2012 / 1:30 – 2:50 PM / Room 210C
Chair: *Ming Hsien Wu, Hamamatsu Corp*
Co-Chair: *Matthew S. Brennesholtz, Insight Media*

75.1: ***Late-News Paper:*** **Human Representation System: A Multi-View Display Using a QDA Screen with Multiple Cameras**
Shiro Ozawa, NTT Corp., Kanagawa, Japan

75.2: ***Late-News Paper:*** **A Passive-Matrix Inorganic LED Array as a Projection Source**
Vincent Lee, Columbia University, New York, NY USA

75.3: ***Late-News Paper:*** **Ultra-Compact Laser-Based Pico-Projector Architectures**
Nayef Abuageel, Luxint, Inc., Westborough, MA USA

75.4: ***Late-News Paper:*** **The Path to 100 lm/W in Embedded Projection: A New DLP-Based Imaging Architecture Using MEMS Spatial-Light-Modulator-Based Diffractive Illumination and UV Laser-Pumped Phosphor or Quantum-Dot Down-conversion**

Adrian Cable, Light Blue Optics, San Jose, CA USA

Poster Session

Thursday, June 7, 2012 / 5:00 – 8:00 pm / Exhibit Hall B1

3D

P.1: **Integral Imaging Using Fly's Eye Lens Made with 3D Printer**
Kazuhisa Yanaka, Kanagawa Institute of Technology, Kanagawa, Japan

P.2: **Turn-Type Full-Color 3D Display System Using Arrays of LEDs**
Kazuhiro Miyakoshi, Kanazawa Institute of Technology, Nonoichi, Japan

P.3: **A Simple Measure to Reduce Optical Crosstalk in an Autostereoscopic Display with Field-Sequential Method and Directional Backlight System**
Akinori Hayashi, Eizo Nanao Corp., Ishikawa, Japan

P.4: **Analysis of Directional Backlight Autostereoscopic Display Timing Crosstalk**
Yung-Yu Hsieh, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

P.158 **LC Barrier with a Shifted ITO Electrode Structure for Additional Sweet Spots**
Kihyung Kang, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

Active-Matrix Devices

P.5: **A Current Feedback AMOLED Display Based on Top-Gate a-Si TFTs**
Patrick Schalberger, University of Stuttgart, Stuttgart, Germany

P.6: **A New Integrated Scan Driver Using Oxide TFTs with Negative Threshold Voltage**
Jin Huh, KAIST, Daejeon, Korea

P.7: **A New 3-TFT Current-Scaling Pixel Circuit for AMOLED Displays**
Chih Lung Lin, National Cheng Kung University, Taiwan

P.8: **Low-Power Gate Driver Circuits for Narrow-Bezel Panel Application**
Po Tsun Liu, National Chiao Tung University, Hsinchu, Taiwan

P.9: **Bridged Grain MIC Poly-Si TFTs with Sputtered AlO_x as Gate Dielectrics**
Wei Zhou, Hong Kong University of Science and Technology, Kowloon, Hong Kong

P.10: **The Reliability Improvement of High-Temperature SOR Driving with Advanced Dual-Gate TFT Application**
Kwang Jo Hwang, LG Display Co., Ltd., Gyeonggi-do, Korea

P.11: **A New Five-Mask-Count Process for Fabrication of Poly-Si Nanowire-Channel CMOS Inverters**
Horng Chih Lin, National Chiao Tung University, Hsinchu, Taiwan

P.12: **A Self-Aligned Bottom-Gate LTPS Backplanes without Ion-Implantation Process**
Arinobu Kanegae, Panasonic Image Devices Development Center, Kyoto, Japan

P.13: **High-Performance Ink-Jet-Printed TFTs on Solution-Wetting Polymer-Gate Dielectric Layer**
Woogun Kang, University of Tokyo, Tokyo, Japan

P.14: **a-IGZO TFT-Based Pixel Circuits for AMOLED Displays**
Hojin Lee, Soongsil University, Seoul, Korea

P.15: **Low-Temperature Process Integration of All-Solution-Processed Oxide TFTs**
Kyung Min Kim, LG Display Co., Ltd., Seoul, Korea

P.16: **A 3-TFT OLED Pixel Circuit for High Stability with In-Pixel Current Source**
Ting Liu, Princeton University, Princeton, NJ

P.17: **Performance Enhancement of Solution-Processed Zn-Sn-O TFTs Using High-Pressure Annealing**
Hyun Jae Kim, Yonsei University, Seoul, Korea

P.18: **Low-Power and Small-Sized Scan Driver Using Amorphous-Oxide TFTs**
Oh-Kyong Kwon, Hanyang University, Seoul, Korea

P.19: **A New Small-Sized Integrated Scan and Emission Driver for Compact AMOLED Displays**
Jin Huh, KAIST, Daejeon, Korea

P.20: **A Universal Circuit Model for Optical Response Simulation of AMLCDs**
Seung Woo Lee, Kyung Hee University, Seoul, Korea

P.21: **High-Performance Solution-Processed IZTO TFT at a Maximum Process Temperature of 230°C**
Jin Jang, Kyung Hee University, Seoul, Korea

P.22: **Metal-Oxide TFT with Mobility and Stability Competitive with LTPS-TFT**
Gang Yu, CBRITE, Inc., Goleta, CA USA

P.139: ***Late-News Poster:*** **AC Gate-Drain-Bias Stress Study of Amorphous Indium Gallium Zinc Oxide TFTs for GOA Applications**
Shih-Che Huang, AU Optronics Corp., Hsinchu, Taiwan

P.140: ***Late-News Poster:*** **Crystallization of Amorphous-Silicon Films on Flexible Glass by Blue-Multi-Diode Laser Annealing as a New LTPS**
Takashi Noguchi, University of the Ryukyus, Okinawa, Japan

P.141: ***Late-News Poster:*** **Characterization of Physical Parameter-Based Reliability on the Negative-Bias Illumination Stress with Wavelength-Dependence in Amorphous-Silicon TFTs**
Hyun Kwang Jeong, Kookmin University, Seoul, Korea

Applications

P.23: **Application of Digital Micro-Hinge Display Technology in Biosensing**

Wallen Mphepo, Beijing University, Beijing, China

P.24: **Generation of 3D image on Optically Rewritable LCD**
Lu Wang, Hong Kong University of Science and Technology, Kowloon, Hong Kong

P.25: **3D Surface Profilometry for Accurate Extraction of Depth Profile with LC Phase Modulator**
Hak Rin Kim, Kyungpook National University, Daegu, Korea

P.26: **Ultra-High-Efficiency Beam-Forming Solid-State-Lighting Luminaires**
Richard Flasck, RAF Electronics Corp., San Ramon, CA USA

P.27: **An Unplugged Electronic Display**
Chu-Hao Tu, AU Optronics Corp., Hsinchu, Taiwan

P.142: ***Late-News Poster:*** **Time-of-Flight-Based 3D Image Sensing Using Holographically Projected Structured Illumination**
Krzysztof Nguyen, University of Edinburgh, Edinburgh, UK

P.143: ***Late-News Poster:*** **A New Characterization of 3D Performance for Multi-View Autostereoscopic Displays**
Sung-Min Jung, LG Display Co., Ltd, Gyeonggi-do, Korea

P.144: ***Late-News Poster:*** **Novel Transparent LCD with Tunable Transparency**
Ching-Huan Lin, AU Optronics Corp., Hsinchu, Taiwan

Applied Vision

P.28: **The Major Factors of Viewing Comfort on Autostereoscopic Displays by Taguchi Experiment Design**
Pei-Chia Wang, National Tsing-Hua University, Hsinchu, Taiwan

P.29: **Critical Level of Crosstalk for Visual Perception of 3D and Viewing-Space Mapping**
Kenji Nakao, Toshiba Mobile Display Co., Ltd., Ishikawa, Japan

P.30: **Study on Improvement of Visual Abilities by Watching Stereoscopic Image**
Yuki Fukai, Toyo University, Saitama, Japan

P.31: **Theory and Application of Paired Comparison Methods in Display and Lighting Preference Study**
Yuning Zhang, Southeast University, Nanjing, China

P.32: **Comparison of Simultaneous Measurement of Lens Accommodation and Convergence in Natural Vision and 3D Vision**
Tomoki Shiomi, Nagoya University, Nagoya, Japan

P.33: **Measurements of a Prototype See-Through Near-to-Eye Display with Diffractive Light Guides**
Toni Jarvenpaa, Nokia Research Center, Tampere, Finland

P.34: **The Effects of Illuminance on Visibility of Reading Tablet Devices and e-Paper**
Shunta Sano, Nagoya University, Nagoya, Japan

P.35: **Individual Differences in the Use of Binocular and Monocular Depth Cues in 3D Graphic Environments**
Hirotaka Fujisaki, Kagoshima University, Kagoshima, Japan

P.145: ***Late-News Poster:*** **Correlation with Pixel Density and Image Quality of Japanese Font by Subjective Evaluation Using Ultra-high Resolution (136 -- 651 ppi) LCDs**
Yuzo Hisatake, Toshiba Mobile Display Co., Ltd., Saitama Japan

Display Electronics

P.36: **An Automatic Channel-Selectable Smart LED-Backlight Driver IC for Various Scaled-Sized LCDs**
Younwoong Chung, Fairchild Semiconductor, Bucheon-si, Korea

P.37: **Single-Inductor Dual-Output Digital Controller for TFT-LCD Driver**
Wen-kuen Liu, ILI Technology Corp., Jhubei City, Taiwan

P.38: **A 10-bit Compact Linear DAC Architecture for RGB Separate Digital Gamma Control in Mobile-LCD Driver ICs**
Ki-Duk Kim, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.39: **DC-DC Converters with Controllable Latch-Up Protection Technique for LCD Mobile-Display Panels**
Seung-Jung Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.40: **Scalable Intra-Panel Interface (SIPI): A Point-to-Point Interface for LCDs**
Kevin Yuan, Parade Technologies, San Jose, CA

P.41: **A New Column-Driver IC Employing a Quaternary Digital-to-Analog Convesion Method for Active-Matrix Displays**
Woo-nyoung Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.42: **A Skew-Less Point-to-Point Mini-LVDS (SPPmL) Interface for TFT-LCD Applications**
Wen Huang, AU Optronics Corp., Hsinchu, Taiwan

P.43: **Single-Stage Inductor-Less and Electrolytic Capacitor-Less Phase-Lock-Loop-Based LED Backlight Driver for High Efficiency and Low Cost**
Ke-Horng Chen, National Chiao Tung University, Hsinchu, Taiwan

P.44: **Electromagnetic Interference (EMI) Suppression in an Intra-Panel Interface with Periodic Clock-Embedded Signaling Scheme**
Kil-Hoon Lee, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.45: **A 2.4-Gbps Receiver with Bang-Bang CDR for High-Speed Intra-Panel Interface**
Tae-Jin Kim, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.46: **Establishing a Compensation Algorithm of AMOLED-Display Degradation with the Particular Principle of Model Measurement**

Paul C.-P. Chao, National Chiao Tung University, Hsinchu, Taiwan

P.47: **Integrating Multi-PWM Device into Source Driver for TFT-LCDs**
Yung-Shu Lin, AU Optronics Corp., Hsinchu, Taiwan

P.48: **Development of Driver IC with Novel Driving Method for the Electrowetting Display**
Hoyong Jung, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

Display Manufacturing

P.49: **Analysis of Light Leakage Caused by Photo-Spacer for Fringe-Field-Switching LCD**
Wei Zhang, Beijing Optoelectronics Technology Co., Ltd., Beijing, China

P.50: **Low-k Acryl Resin as Planarization Layer on TFT-LCD**
Qiyu Shen, Beijing Optoelectronics Technology Co., Ltd., Beijing, China

P.51: **Low-Temperature Crystallization of a-InGaZnO$_4$ Films**
Akihiko Hiroe, Tokyo Electron, Ltd., Nirasaki, Japan

P.52: **A Simulation Assisted Neural-Networks Forecasting System for TFT-LCD Color-Filter Fabs**
PoTsang Huang, Chung-Yuan Christian University, Chung-Li, Taiwan

P.53: **Pressure-Sensitive Adhesives to Reduce the Light Leakage of LCDs**
Satoshi Yanai, Keio University, Kanagawa, Japan

P.54: **Contact-Printing Technologies for Encapsulation of Flexible OLEDs**
Byeong Kwon Ju, Korea University, Seoul, Korea

P.55: **High-Performance Sealant in One-Drop Filling Process of Mobile TFT-LCD Products**
Ang Xiao, Beijing Optoelectronics Technology Co., Ltd., Beijing, China

P.138: **Simulation-Based Look-Ahead Release Planning for Color-Filter Fabs**
James Chen, National Taiwan University of Science and Technology, Taipei, Taiwan

P.146: ***Late-News Poster:*** **Development of a Photochromic Circular Polarizer for OLEDs**
Norio Koma, Sanyo Epson Imaging Devices Corp., Gifu, Japan

P.147: ***Late-News Poster:*** **Electrical Properties of Oxide TFT with an IGZO/AlO$_x$ Stack Grown by Solution-Based Non-Vacuum Mist Chemical Vapor Deposition**
Toshiyuki Kawaharamura, Kochi University of Technology, Kami, Japan

Display Measurement

P.56: **A Method for Quantifying Hot-Spot Mura in Edge-Type BLUs**
Che Chang Hu, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China

P.57: **A Novel Evaluation Method for 3D Display Viewing Zone**
Wen Hui Chang, National Taiwan University, Taipei, Taiwan

P.58: **Accelerating Phase-Shifting Technique in Quantitative Differential Interference Contrast System for Critical Dimension Measurement of TFT Substrate**
Wen-Chiuan Lin, National Tsing Hua University, Hsinchu, Taiwan

P.59: **Starfield Contrast: A Quantitative Method to Determine the Contrast of Displays with Dynamic Backlights**
Joe Miseli, Oracle, Redwood City, CA USA

P.60: **Comparison of Temporal Properties of Various Glass-Type 3D Displays**
Shau-Wei Hsu, ITRI, Hsinchu, Taiwan

P.61: **The Measurement of the Properties of the Liquid Crystals in a Multi-Domain VA Panel**
Nakcho Choi, Samsung Electronics Co., Ltd., Gyeonggi-do, Korea

P.62: **The Evaluation of Gray-to-Gray Crosstalk for Time-Sequential Stereoscopic Display**
Fu-Hao Chen, ITRI, Hsinchu, Taiwan

Display Systems

P.63: **Optimization Design of Irradiance Array for the Direct-Lit LED Backlight**
Zhenrong Zheng, Zhejiang University, Hangzhou, China

P.64: **Fabrication Method of Fresnel Lens Based on Electrohydrodynamic Instability**
Chang Jae Yu, Hanyang University, Seoul, Korea

P.65: **A Novel Highly Collimating Backlight Module Using a Double Wedge-Shaped Lightguide Plate**
Wang Jun, Shanghai Jiang Tong University, Shanghai, China

P.66: **Accelerated-Life-Test (ALT) Evaluation Method for Backlight LEDs**
I-Hsun Hsieh, AU Optronics Corp., Hsinchu, Taiwan

Emissive Displays

P.67: **Enhanced Photoluminescence Property of Single-Molecular Precursor CdSe/ZnS Quantum Rod**
Wei Lei, Southeast University, Nanjing, Jiangsu, China

P.68: **Dye-Bridged Hybrid Materials for Robust and High-Performance Wavelength Converter of White LEDs**
Byeong-Soo Bae, KAIST, Daejeon, Korea

P.69: **Study on Improvement of Luminous Efficacy in Pulse-Driven LEDs**
Takahiro Arai, Toyo University, Kawagoe, Japan

P.70: **The Effects of Orthogonal Solvent of Colloidal Quantum Dots on QD-LED Device**
Yohan Kim, Dankook University, Gyeonggi-do, Korea

P.71: **Synthesis and Photoluminescence Properties of Vertically Well-Aligned ZnO Nanostructures**

Chaoyang Li, Kochi University of Technology, Kami, Japan

P.72: **Efficient Red, Green, and Blue QD-LEDs Fabricated with the QD Transplanting Process on a Common Hole-Transport Layer**
Chang Hee Lee, Seoul National University, Seoul, Korea

P.73: **Properties of Different Cold Cathodes on the Efficiency in FEDs**
Alireza Khorami, IRIB University, Tehran, Iran

P.74: **WITHDRAWN**

P.75: **Characteristics of Two-Level Sustain Waveform in ACPDPs**
Jungwon Kang, Dankook University, Gyeonggi-do, Korea

Flexible Displays

P.76: **Resistive Switching Memory Device Based on a-AZTO Film for Flexible Electronics Applications**
Po Tsun Liu, National Chiao Tung University, Hsinchu, Taiwan

P.77: **Image Sticking in a Flexible LCD Stabilized with Polymers: Surface Gliding Effect**
Ji-Hoon Lee, Pusan National University, Pusan, Korea

P.78: **Electrophoretic Hybrid Particles Synthesis by Dispersion Polymerization in Organic Media: Towards Electrophoretic Display Applications**
Antoine Charbonnier, LCPO/Université Bordeaux, Talence, France

P.79: **Principal Component Analysis on Characterizing Full-Color Electrophoretic Display**
Yen Hsing Lu, National Chiao Tung University, Hsinchu, Taiwan

P.80: **Glass Cloth-Reinforced Transparent Film for Plastic Displays**
Hirotsugu Kishimoto, Panasonic Electric Works, Co., Ltd, Osaka, Japan

P.81: **Printed Organic Single-Crystal TFTs with Bottom-Contact Structure**
Sung Kyu Park, Korea Electronics Technology Institute, Seongnam, Korea

P.82: **Lateral Driving Phenomena in Electrophoretic Displays**
Po-Chun Hsu, National Chiao Tung University, Hsinchu, Taiwan

P.83: **Ghosting-Reduction Driving Method in Electrophoretic Displays**
Shang-Han Yang, National Chiao-Tung University, Hsinchu, Taiwan

P.148: ***Late-News Poster:*** **Direct Photolithographic Color Filter for 14.1-in. Flexible Color Electrophoretic Displays**
Yen-Huei Lai, AU Optronics Corp., Hsinchu, Taiwan

P.149: ***Late-News Poster:*** **Uniaxially Cracked ITO on PET Substrate and Its Application in Flexible Displays**
John West, Kent State University, Kent, OH USA

P.150: ***Late-News Poster:*** **A Novel Handling Method of Ultra-Thin Glass for Thin and Flexible Displays**
Kenichi Ebata, Asahi Glass Co., Ltd, Yokohama, Japan

P.159: ***Late-News Poster:*** **A Liquid Crystal Based Contact Lens Display Using PEDOT:PSS and Obliquely Evaporated SiO_2**
Jelle De Smet, CMST-imec, Zwijnaarde, Belgium

Liquid-Crystal Technology

Blue Phase

P.84: **Thermal Switchable Bistable Cholesteric Blue-Phase LCD**
Tsung Hsien Lin, National Sun Yat Sen University, Kaohsiung, Taiwan

P.85: **A Novel Transflective Display Using Blue-Phase Liquid Crystal**
Jian Gang Lu, Shanghai Jiao Tong University, Shanghai, China

P.86: **A Viewing-Angle-Controllable Blue-Phase LCD**
Qiong Hua Wang, Sichuan University, Chendgu, China

P.87: **Ultra-High-Transmittance Blue-Phase LCD with Double In-Plane-Switching Electrodes**
Chao Ping Chen, Infovision Optoelectronics Co., Ltd., Jiangsu, China

P.88: **High-Transmittance Polymer-Stabilized Blue-Phase LCD with Fringe-Field-Switching Electrodes**
Jae Hoon Kim, Hanyang University, Seoul, Korea

P.89: **Fast-Switching and Hysteresis-Free Polymer-Stabilized BPIII Device**
Hui-Yu Chen, Feng Chia University, Taichung, Taiwan

P.90: **Surface Pinning Effect on Blue-Phase Liquid Crystal**
Seung Hee Lee, Chonbuk National University, Jeonbuk-do, Korea

Liquid-Crystal Alignment

P.91: **Hysteresis Reduction in EO Characteristics of Photoaligned IPS-LCDs Using Polymer-Surface-Stabilized Method**
Yasufumi Iimura, Tokyo University of Agriculture & Technology, Tokyo, Japan

P.92: **A 2-msec Nematic Liquid-Crystal Mode without Alignment Layers**
Tae Hoon Yoon, Pusan National University, Busan, Korea

P.93: **Structure and Properties of Azo Dye Films for Photoalignment and Photochromic Applications**
Victor Belyaev, Moscow Region State University, Moscow, Russia

P.94: **Nano-Particle-Induced VA-LCD**
Seung Hee Lee, Chonbuk National University, Jeonbuk-do, Korea

P.95: **Novel Rubbing Cloth Providing an Alignment Layer with Low Pretilt Angle and Large Azimuthal Anchoring Energy**
Shoichi Ishihara, Osaka Institute of Technology, Osaka, Japan

P.137: **Measurement of the LC Pretilt Angle and Polar Anchoring in Cells with Homogeneous and Inhomogeneous LC Director Configuration and Weak Anchoring on Organosilicon Aligning Films**
Victor Belyaev, Moscow Region State University, Moscow, Russia

Liquid-Crystal Modes

P.96: **Stable Chiral Hybrid In-Plane-Switching Mode for Transparent Display**
Chang Jae Yu, Hanyang University, Seoul, Korea

P.97: **Electrode Structure for High-Transmittance IPS Mode**
Tae Hoon Yoon, Pusan National University, Busan, Korea

P.98: **UV Aligned IPS-LCD for High-Resolution Smart Displays**
Han Jin Ahn, LG Display Co., Ltd., Gyeonggi-do, Korea

P.99: **Fast Nematic Liquid-Crystal Device Using Hybrid Driving Scheme**
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