Session 1: Annual SID Business Meeting
Tuesday, June 2 / 8:00 – 8:20 am / Ballroom 220A

Session 2: Opening Remarks / Keynote Addresses
Tuesday, June 2 / 8:20 – 10:20 am / Ballroom 220A
2.1: Keynote 1: TBA
2.2: Keynote 2: TBA
2.3: Keynote 3: TBA

Session 3: Wearable Display Systems (Wearable Displays / Display Systems / Projection)
Tuesday, June 2 / 10:50 am – 12:10 pm / Ballroom 220B
Chair: Brian Schowengerdt, University of Washington
Co-Chair: Matthew Brennesholz, Display Central
3.1: Achieving Inconspicuous Head-Mounted-Display Optics
Timothy Wong, 3M Co., St. Paul, MN, USA
3.2: High-Image-Quality Wearable Displays with Fast-Response Liquid Crystal
Zhenye Luo, University of Central Florida, Orlando, FL, USA
3.3: Single-Mirror IMOD Display for Practical Wearable Devices
Tallis Chang, Qualcomm MEMS Technologies, Inc., San Jose, CA, USA

Session 4: Flexible Display Manufacturing (Display Manufacturing)
Tuesday, June 2 / 10:50 am – 12:10 pm / Ballroom 220C
Chair: Bradley Bowden, Corning Incorporated
Co-Chair: Chiwoo Kim, Samsung Display
4.1: Apparatus for Manufacturing Flexible OLED Displays: Adoption of Transfer Technology
Satoru Idoji, Advanced Film Device, Inc., Tochigi, Japan
4.2: Study of ACF Bonding Technology in Flexible Display Module Packages
Yen Lai, AU Optronics Corp., Hsinchu, Taiwan, ROC
4.3: Ultra-Thin LTPS TFT-LCD by Using Glass-on-Carrier Technology
Shun-Ping Chiao, AU Optronics Corp., Hsinchu, Taiwan, ROC
4.4: Dimension Control of a Color Filter Fabricated by Using a Transfer Method
Tadahiro Furukawa, Yamagata University, Yamagata, Japan

Session 5: Image Quality of Displays (Applied Vision/Human Factors)
Tuesday, June 2 / 10:50 am – 12:10 pm / Room LL20A
Chair: Sakuichi Ohtsuka, Kagoshima University
Co-Chair: David Hoffman, Samsung Semiconductor
5.1: Influence of Pixel Density on Image Quality of Smartphone Displays
Yuzo Hisatake, Japan Display, Inc., Tokyo, Japan
5.2: Simulation of Color-Breakup Perception Using Eye-Tracking Data
Keita Hirai, Chiba University, Chiba, Japan
5.3: Extending the Flicker Visibility Metric to a Range of Mean Luminance
Andrew Watson, NASA Ames Research Center, Moffett Field, CA, USA
5.4: Subpixel Rendering for a High-Resolution OLED Display with Low-Resolution Photomasks
Hsi-Chun Lin, National Taiwan University of Science and Technology, Taipei, Taiwan, ROC

Session 6: Novel Display Applications I (Applications)
Tuesday, June 2 / 10:50 am – 12:10 pm / Room LL20BC
Chair: Ian Underwood, University of Edinburgh
Co-Chair: Jean-Noel Perbet, THALES Avionics
6.1: A New Application of a Touch-Screen Display for Data Transfer
Philippe Cori, THALES Avionics SAS, Le Haillan, France
6.2: Hybrid-Type Temperature Sensors Using TFTs
Mutsu Kimura, Ryukoku University, Otsu, Japan
6.3: Adaptable Light Beaming and Shaping Using an LED Matrix and Fresnel Lens Array
Feixia Wang, Southeast University, Nanjing, China
6.4: Local Tone-Mapping-Based Dynamic Backlight Control Algorithm
Viacheslav Chesnokov, Apical Ltd., London, UK
Session 7: OLED Driving Techniques (Display Electronics)
Tuesday, June 2 / 10:50 am – 12:10 pm / Room LL20D
Chair: Wei Yao, Apple, Inc.
Co-Chair: Dick McCartney, Consultant
7.1: Invited Paper: Novel OLED Display Technology for Large-Sized UHD OLED TVs
Hong-Jae Shin, LG Display Co., Ltd., Gyeonggi-do, South Korea
7.2: A Pixel Structure Using a Switching Error-Reduction Method for High-Image-Quality AMOLED Displays
Oh-Kyong Kwon, Seoul, South Korea
7.3: Depletion-Mode Oxide-TFT Shift Register with Wide Operating Frequency Range for AMOLED Displays
Inhyo Han, LG Display Co., Ltd., Gyeonggi-do, South Korea
7.4: A Slim Border Design for Wearable Displays: Using a Novel P-Type Shift Register and an Optimal Layout Arrangement
Yung-Sheng Tsai, AU Optronics Corp., Taiwan, ROC

Session 8: Quantum-Dot Materials (Emissive Displays / Disruptive Materials)
Tuesday, June 2 / 10:50 am – 12:10 pm / Room LL20EF
Chair: Seth Coe-Sullivan, QD Vision, Inc.
Co-Chair: Tomokazu Shiga, The University of Electro-Communications
8.1: Invited Paper: Alignment of Quantum Rods
Masaki Hasegawa, Merck, Ltd., Japan, Kanagawa, Japan
8.2: Semiconductor Quantum Rods for Display Applications
Ehud Shaviv, Qlight Nanotech, Ltd., Jerusalem, Israel
8.3: Next-Generation Display Technology: Quantum-Dot LEDs
Jesse Manders, NanoPhotonica, Gainesville, FL, USA

Session 9: Wearable Displays: Direct View (Wearable Displays / e-Paper and Flexible Displays)
Tuesday, June 2 / 2:00 – 3:20 pm / Ballroom 220B
Chair: Ruiqing (Ray) Ma, Universal Display Corp.
Co-Chair: Yongtaek Hong, Seoul National University
Zhenan Bao, Stanford University, Stanford, CA, USA
9.2: A Novel Lamination Process for Flexible AMOLED Encapsulation
Wang Tao, BOE Technology Group Co., Ltd., Beijing, China
9.3: The First Flexible LCD Applied to a Wearable Smart Device
Wen-Yuan Li, AU Optronics Corp., Hsinchu, Taiwan, ROC
9.4: Stretchable 45 x 80 RGB-LED Display Using Meander Wiring Technology
Hideki Ohmoe, Panasonic Corp., Moriguchi, Japan

Session 10: OLED Encapsulation and Reliability (Display Manufacturing)
Tuesday, June 2 / 2:00 – 3:20 pm / Ballroom 220C
Chair: Ion Bita, Apple, Inc.
Co-Chair: Dawei Wang, BOE Technology Group Co., Ltd.
Johannes Fahlteich, Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Dresden, Germany
10.2: High-Performance Barrier Films for Flexible Organic Display and Lighting Applications
Jyrki Kimmel, Nokia Technologies, Tampere, Finland
10.3: An Empirical Analysis of the Factors Effecting the Reliability of AMOLED Displays
Jang-Yeon Kwon, Yonsei University, Incheon, South Korea
10.4: Non-Contact Current Measurements for AMOLED Backplanes Using Electron-Beam-Induced Plasma Probes
Daniel Toet, Photon Dynamics, an Orbotech Company, San Jose, CA, USA

Session 11: Human Factors and Applications (Applied Vision/Human Factors)
Tuesday, June 2 / 2:00 – 3:20 pm / Room LL20A
Chair: Yi-Pai Huang, National Chiao Tung University
Co-Chair: Takashi Shibata, Tokyo University of Social Welfare
Fang-Cheng Lin, Display Institute, National Chiao Tung University, Hsinchu, Taiwan, ROC
11.2: Usefulness of Stereoscopic 3D Images in Elementary-School Classes
Takashi Shibata, Tokyo University of Social Welfare, Gunma, Japan
11.3: Readability Performance and Subjective Appraisal of Curved Monitors
Hyoeon-Jeong Suk, KAIST, Daejeon, South Korea
11.4: Study on the Saccadic-Eye-Movement Metric of Visual Fatigue Induced by 3D Displays
Yue Liu, Beijing Institute of Technology, Beijing, China

Session 12: Novel Display Applications II (Applications)
Tuesday, June 2 / 2:00 – 3:20 pm / Room LL20BC
Chair: Gary Jones, Nanoquantum Corp.
Co-Chair: Bao-Jen Pong, ITRI
Fu-Chung Huang, University of California at Berkeley, Berkeley, CA, USA

12.2: *Flame-Resistant and Heat-Resistant Lithium-Ion Battery Used to Operate Heat-Resistant OLEDs*
Teppei Ogumi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

12.3: *Creation of a Wavy Ag Nanowire Network and Its Implication for Transparent Electrodes with Robust Stretchability*
Jun Beom Pyo, KIST, Seoul, South Korea

12.4: *A Liquid-Crystal Biosensor for Liver Diseases*
Sihui He, University of Central Florida, Orlando, FL, USA

**Session 13: Advanced Displays and Imaging (Display Electronics)**

Tuesday, June 2 / 2:00 – 3:20 pm / Room L1.20D

Chair: Haruhiko Okumura, Toshiba Corp.

Co-Chair: Achin Bhowmik, Intel Corp.

13.1: *Invited Paper: Head-Up Displays with MEMS Laser Microprojection Technology*
Nicolas Abelé, Lemoptix SA, Lausanne, Switzerland

13.2: *360° Multi-Faced Tracking and Interaction Using a Panoramic Camera*
Li Feng, Zhejiang University, Hangzhou, China

13.3: *Efficient Direct Light-Field Rendering for Autostereoscopic 3D Displays*
Young Ju Jeong, Samsung Advanced Institute of Technology, Suwon, South Korea

13.4: *An Electro-Optical Transfer Function with Improved Uniformity of Palette-Color Distribution in Absolute Color Space*
Senfar Wen, Yuan Ze University, Chung-Li, Taiwan, ROC

**Session 14: Photoluminescent Quantum Dots (Emissive Displays)**

Tuesday, June 2 / 2:00 – 3:20 pm / Room L1.20EF

Chair: John Van Derlofske, 3M Co.

Co-Chair: Larry Weber, PLEXIE

14.1: *Invited Paper: Heavy-Metal-Free Quantum Dots for Display Applications*
Nigel Pickett, Nanoco Technologies, Ltd., Manchester, UK

14.2: *Invited Paper: Cadmium- and Indium-Based Quantum-Dot Materials*
Seth Coe-Sullivan, QD Vision, Lexington, MA, USA

14.3: *Optimizing Quantum-Dot LCD Systems to Achieve Rec. 2020 Color Performance*
James Thielen, 3M Co., Maplewood, MN, USA

**Session 15: Applied Vision and Applications of Wearable Displays (Wearable Displays / Applications)**

Tuesday, June 2 / 3:40 – 5:00 pm / Ballroom 220B

Chair: Jyrki Kimmel, Nokia Technologies

Co-Chair: Jeffrey Mulligan, NASA Ames Research Center

15.1: *Data Glasses for Improved User Interaction in 3D*
Rigo Herold, Westsächsische Hochschule Zwickau, Zwickau, Germany

15.2: *High-Luminance Monochromatic See-Through Eyewear Display with Volume Hologram*
Takashi Oka, Sony Corp., Kanagawa, Japan

15.3: *Optimal Monitor Gamma for Transparent Displays*
Youngshin Kwak, Ulsan National Institute of Science and Technology, Ulsan, South Korea

15.4: *Weight Optimization of Near-to-Eye Light-Field Displays Based on the Human Visual System*
Li Feng, Zhejiang University, Hangzhou, China

**Session 16: OLED Deposition and Patterning (Display Manufacturing)**

Tuesday, June 2 / 3:40 – 5:00 pm / Ballroom 220C

Chair: Greg Gibson, FAS Holdings Group

Co-Chair: Ake Hornell, EuroLCDs SIA

Ian Parker, DuPont Displays, Santa Barbara, CA, USA

16.2: *True-Color 640-ppi OLED Arrays Patterned by CA In-Line Photolithography*
Pawel Malinowski, imec, Leuven, Belgium

16.3: *Fully R2R-Processed Flexible OLEDs for Lighting*
Takashi Minakata, Chemical Materials Evaluation and Research Base (CEREBA), Ibaraki, Japan

16.4: *Electroforming Technology for Manufacturing Thin Metal Masks with Very Small Apertures for OLED Display Manufacturing*
Sandaram N. Kumar, Advantek US, Inc., Pittsburgh, PA, USA

**Session 17: Color Appearance of Displays (Applied Vision/Human Factors)**

Tuesday, June 2 / 3:40 – 5:00 pm / Room L1.20A

Chair: Miyoshi Ayama, Utsunomiya University

Co-Chair: Jennifer Gille, Qualcomm Technologies

James Hillis, 3M Co., Maplewood, MN, USA

17.2: *Kansei Evaluation of Color Images Presented in Color Gamuts of Different Blue Primaries*
Miyoshi Ayama, Utsunomiya University, Utsunomiya, Japan

17.3: *D-CIELab: A Color Metric for Dichromatic Observers*
Haomiao Jiang, Stanford University, Stanford, CA, USA
17.4: Image-Quality Assessment of Large UHD LCDs Using Quantum-Dot and RGBW Technologies
Ji-Yuan Huang, National Taiwan University, Taipei, Taiwan, ROC

Session 18: Applications of Flexible Display Technology (Applications / e-Paper and Flexible Displays)
Tuesday, June 2 / 3:40 – 5:00 pm / Room LL20BC
Chair: Jin Jang, Kyung Hee University
Co-Chair: Lauren Palmateer, Rovi Corp.
18.1: Invited Paper: Foldable AMOLED Displays with a Touch Panel
Jia-Chong Ho, ITRI, Hsinchu, Taiwan, ROC
18.2: Invited Paper: Flexible eWriter Technology and Applications
Asad Khan, Kent Displays, Inc., Kent, OH, USA
18.3: A 8.67-in. Foldable OLED Display with an In-Cell Touch Sensor
Kazunori Watanabe, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
18.4: A 13.3-in. 664-ppi Foldable AMOLED Display with Crystalline Oxide-Semiconductor FETs
Kei Takahashi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 19: Image Processing for Display Enhancement (Display Electronics)
Tuesday, June 2 / 3:40 – 5:00 pm / Room LL20D
Chair: Seung Woo Lee, Kyung Hee University
Co-Chair: Ya Hsiang Tai, National Chiao Tung University
Yong-Duck Ahn, Dong-A University, Busan, South Korea
19.2: Compensation of OLED I-V Drift for Suppressing Image Sticking in a Digital AMOLED Display Module
Pascal Volker, Saarland University, Saarbruecken, Germany
19.3: A Novel Rendering Algorithm with Adaptive Weighting Factors
Shang-Yu Su, AU Optronics Corp., Hsinchu, Taiwan, ROC
19.4: Denoising for Polarizer-Free Imaging of a Liquid-Crystal Lens
Mao Ye, SuperD Co., Ltd., Quanzhou, China

Session 20: Electroluminescent Quantum Dots (Emissive Displays / Disruptive Materials)
Tuesday, June 2 / 3:40 – 5:00 pm / Room LL20EF
Chair: Masayuki Nakamoto, Shizuoka University
Co-Chair: Yong-Seog Kim, Hongik University
20.1: Invited Paper: Red and Green Quantum-Dot-Based LEDs Demonstrating Excellent Color Coordinates
Pooopathy Kathirgamanathan, Brunel University London, Uxbridge, UK
20.2: Ultra-Bright Highly Efficient Low-Roll-Off Inverted Quantum-Dot LED Devices (QLEDs)
Yajie Dong, University of Central Florida, Orlando, FL, USA
20.3: Optimizing the Balance of Holes and Electrons in Inverted Quantum-Dot LEDs by Inserting an Electron-Transport Barrier Layer
Yihin Juang, Hong Kong University of Science & Technology, Kowloon, Hong Kong
20.4: Quantum-Dot LEDS with Charge-Generation Layers
Jin Jang, Kyung Hee University, Seocho, South Korea

Session 21: Oxide-TFT Manufacturing (Display Manufacturing)
Wednesday, June 3 / 9:00 – 10:20 am / Ballroom 220B
Chair: Toshiaki Arai, JOLED, Inc.
Co-Chair: Tian Xiao, CBRITE, Inc.
21.1: Invited Paper: High-Throughput Metal-Oxide TFT with Organic Etch Stopper and SiN, Gate Insulator
Gang Yu, CBRITE, Inc., Goleta, CA, USA
21.2: Highly Reliable Oxide TFT with Novel Oxide Passivation Layers by All-Printing Processes
Shinji Matsumoto, Ricoh Co., Ltd., Yokohama, Japan
21.3: A Novel 5-Mask Etch-Stopper Pixel Structure with a Short-Channel Oxide-Semiconductor TFT
Joon-Young Yang, LG Display Co., Ltd., Gyeonggi-do, South Korea
21.4: Deposition Conditions and High-Resolution TEM Characterization of CAAC IGZO
David Lynch, Cornell University, Ithaca, NY, USA

Session 22: OLED Materials I (OLEDs)
Wednesday, June 3 / 9:00 – 10:20 am / Ballroom 220C
Chair: Denis Kondakov, DuPont Displays
Co-Chair: C. C. Lee, BOE Technology Group Co., Ltd., Beijing, China
22.1: Invited Paper: New Fluorescent Blue Host Materials for Achieving Low Voltage in OLEDs
Hitoshi Kuma, Idemitsu Kosan Co., Ltd., Chiba, Japan
22.2: Invited Paper: Development of Electron-Transport Material to Improve the Efficiency and Lifetime of Blue-Emitting Devices in OLEDs
Tae-Hyung Kim, Doosan Corp., Gyeonggi-do, South Korea
22.3: CbzTAZ Hosts in Blue OLED Device Demonstrates an High Current Efficiency of Over 52 cd/A
Tien-Lung Chiu, Yuan Ze University, Chung-Li, Taiwan, ROC
22.4: Synthesis of Host Materials for Blue Phosphorescent OLEDs with High Efficiency and Low Driving Voltage
Jun Yeob Lee, Dankook University, Yongin, South Korea
Session 23: e-Paper (e-Paper and Flexible Displays)
Wednesday, June 3 / 9:00 – 10:20 am / Room LL20A
Chair: Chao-Yuan Chen, Jiangsu Hecheng Display Technology
Co-Chair: Makoto Omodani, Tokai University
23.1: **Invited Paper:** Colloidal Dispersion Materials for Electrophoretic Displays and Beyond
Mark Goulding, Merck Chemicals, Ltd., Southampton, UK
23.2: Predicting the Viewing-Direction Performance of e-Paper Displays with a Front Light under Ambient Lighting Conditions
Dirk Hertel, E Ink Corp., Billerica, MA, USA
23.3: Flexible Semitransparent eWriter Displays
Clinton Braganza, Kent Displays, Inc., Kent, OH, USA

Session 24: 3D Light-Field Displays and Imaging (Display Systems)
Wednesday, June 3 / 9:00 – 10:20 am / Room LL20BC
Chair: Nikhil Balram, Ricoh Innovations Corp.
Co-Chair: K. Käläntär, Global Optical Solutions
24.1: **Invited Paper:** Design Principles for Light-Field Image Capture and Display
Kathrin Berkner, Ricoh Innovations Corp., Menlo Park, CA, USA
24.2: Real-Time Rendering 360° Floating Light-Field 3D Display
Li Feng, Zhejiang University, Hangzhou, China
24.3: Adaptive Optimization of Rendering for Multi-Projector-Type Light-Field Display
Li Feng, Zhejiang University, Hangzhou, China
24.4: Floating 3D Image for High-Resolution Portable Device Using Integral Photography Theory
Chih-Wei Shih, National Chiao Tung University, Hsinchu, Taiwan, ROC

Session 25: Laser Phosphor Light Sources for Projectors (Projection)
Wednesday, June 3 / 9:00 – 10:20 am / Room LL20D
Chair: David Eccles, Rockwell Collins
Co-Chair: Frederic Kahn, Kahn International, Inc.
25.1: The Progress in International Safety Standards for Laser-Illuminated Projection Systems
Heidi Hoffman, LIPA, San Jose, CA, USA
25.2: High-Brightness Solid-State Light Source for 4K Ultra-Short-Throw Projector
Yuki Maeda, Sony Corp., Kanagawa, Japan
25.3: A Miniature Laser-Driven Visible-Light Source
Nayef Abu-Ageel, Michigan State University, East Lansing, MI, USA
25.4: Laser-Excited Phosphor/Dye in Liquid for High-Power Digital Projectors
Kenneth Li, Wavien, Inc., Valencia, CA, USA

Session 26: Micro LED Displays and Electroluminescence (Emissive Displays)
Wednesday, June 3 / 9:00 – 10:20 am / Room LL20EF
Chair: Poopathy Kathirgamanathan, Brunel University London
Co-Chair: Qun Yan, Sichuan COC Display Devices Co., Ltd.
26.1: **Invited Paper:** Quantum Photonic Imager (QPI): A Novel Display Technology that Enables More Than 3D Applications
Chih-Li Chuang, Ostendo Technologies, Inc., Carlsbad, CA, USA
26.2: Invited Paper: High-Brightness Emissive Microdisplay Developed by Integration of III-V LEDs with Thin-Film Silicon Transistors
Vincent Lee, Lumioide, Inc., New York, NY, USA
26.3: High-Resolution Laser-Etched Circuitry for ACEL Lamps
Jack Silver, Wolfson Centre, Brunel University, Uxbridge, UK

Session 27: Advanced Manufacturing Technologies (Display Manufacturing)
Wednesday, June 3 / 10:40 am – 12:00 pm / Ballroom 220B
Chair: Joerg Winkler, PLANSEE SE
Co-Chair: Wei Lung Liau, AU Optronics Corp.
27.1: **Invited Paper:** Liquid-Crystal Mixtures for Creating Polymer Walls in LCDs
Nils Greinert, Merck KGaA, Darmstadt, Germany
27.2: The Fabrication of a New PSVA Pixel Structure by Using Gray-Tone Mask Technology
Zhuming Deng, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China
27.3: Development of Highly Durable Achromatic Polarizer with High Heat and Moisture Resistance
Noriaki Mochizuki, Nippon Kayaku Co., Ltd., Tokyo, Japan
27.4: Selective Laser-Annealing System for LTPS-TFT Panels
Shigeto Sagimoto, V Technology Co., Ltd., Kanagawa, Japan

Session 28: OLED Materials II (OLEDs)
Wednesday, June 3 / 10:40 am – 12:00 pm / Ballroom 220C
Chair: Yasunori Kijima, JOLED, Inc.
Co-Chair: Chin Hsin (Fred) Chen, Guangdong Aglaia Optoelectronic Materials Co., Ltd.
28.1: **Invited Paper:** Triplet-Energy Control of PAHs by Heteroatom Incorporation for Development of Efficient Materials for PHOLEDs
Takuji Hatakeyama, Kwansei Gakuin University, Hyogo, Japan
Session 29: TFTs and Circuits for Flexible Devices (e-Paper and Flexible Displays / Active-Matrix Devices / Oxide and LTPS TFTs)
Wednesday, June 3 / 10:40 am – 12:00 pm / Room LL20A
Chair: Ryoichi Ishihara, Delft University of Technology
Co-Chair: Sang-Hee Park, KAIST
29.1: Solution-Processed Poly-Si TFTs at Paper-Compatible Temperatures
Miki Trifunovic, Delft University of Technology, Delft, The Netherlands
29.2: Silicon Ink-Based Poly-Si CMOS TFT Fabricated on 300-mm Stainless-Steel-Foil Substrates
Mao Takashima, Thin Film Electronics, Inc., San Jose, CA, USA
29.3: High-Resolution Flexible AMOLED Display with Integrated Gate Driver Using Bulk-Accumulation a-IGZO TFTs
Ji Ho Lee, Kyung Hee University, Seoul, South Korea
29.4: Flexible AMOLED Display with Integrated Gate Driver Operating at an Operation Speed Compatible with a 4k x 2k Display
Soeren Steudel, imec, Leuven, Belgium

Session 30: 3D Applications (Applications)
Wednesday, June 3 / 10:40 am - 12:00 pm / Room LL20BC
Chair: Susan Jones, Nulumina Corp.
Co-Chair: Adi Ahileah, Adi-Display Consulting, LLC
30.1: Review of Dynamic Holography in Materials for Large-Sized Holographic 3D Video Displays
Jicheng Liu, Shanghai University, Shanghai, China
30.2: Color Holographic Projection Based on Liquid Lens
Qiong-Hua Wang, Sichuan University, Chengdu, China
30.3: Design Parameters for a Curved Barrier-Type Autostereoscopic Display
Wei-Chieh Lin, National Taiwan University, Taipei, Taiwan, ROC
30.4: Multi-Plane Holographic Display with a Uniform 3D Gerchberg-Saxton Algorithm
Yikai Su, Shanghai Jiao Tong University, Shanghai, China

Session 31: Disruptive LCD Materials (Liquid-Crystal Technology / Disruptive Materials)
Wednesday, June 3 / 10:40 am – 12:00 pm / Room LL20D
Chair: Shui-Chih Lien, TCL Group
Co-Chair: Yukito Saitoh, FUJIFILM Corp.
31.1: Evolution of Cellulose Triacetate (TAC) Films for LCDs: Novel Technologies for High Hardness, Durability, and Dimensional Stability
Ryo Suzuki, FUJIFILM Corp., Kanagawa, Japan
31.2: Low-Dielectric-Constant Materials for High-Performance LCDs
Haiwei Chen, University of Central Florida, Orlando, FL, USA
31.3: New Approach to Developing Liquid-Crystal Materials for Idling Stop Driving on Reflective Displays
Yasuhiro Niikura, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
31.4: Nano-Phase-Separated Liquid Crystals (NPS LCs) with Fast Response Time
Toru Fujisawa, DIC Corp., Ina, Japan

Session 32: Front Lighting and Reflective Displays (Display Systems / e-Paper and Flexible Displays / Lighting)
Wednesday, June 3 / 10:40 am – 12:00 pm / Room LL20EF
Chair: K. Käläntär, Global Optical Solutions
Co-Chair: Kevin Gahagan, Corning Incorporated
32.1: Front Light for Color Electrophoretic Display Applications
Hsin-Tao Huang, E Ink Holding, Inc., Hsinchu, Taiwan, ROC
32.2: A Study on the Front Light Guide Used in Color Reflective LCDs
Xinxing Wang, BOE Technology Group Co., Ltd., Beijing, China
32.3: Enhancing Interferometric Display Color Viewing-Angle Performance Using a Fiber-Array Film
Jian Ma, Qualcomm MEMS Technologies, Inc., San Jose, CA USA

Session 33: Novel Devices (Active-Matrix Devices)
Wednesday, June 3 / 3:30 – 4:50 pm / Ballroom 220B
Chair: Kazuyoshi Omata, Konica Minolta
Co-Chair: Mike Hack, Universal Display Corp.
33.1: Invited Paper: A Novel Vertical-Type Light-Emitting Transistor
Tadahiko Hirai, CSIRO, Clayton, Australia
33.2: Neuron MOS Devices Using TFTs
Mutsumi Kimura, Ryukoku University, Otsu, Japan
33.3: Fabrication of an All-Screen-Printed Oxide-Semiconductor-TFT Active-Matrix Backplane
Kazuhiro Fukuda, Japan Advanced Institute of Science and Technology, Ishikawa, Japan
33.4: Flexible IGZO TFTs with a Disruptive Photo-Patternable and Thermally Stable Organic Gate Insulator
Hsing-Hung Hsieh, Polyera Taiwan Corp., Hsinchu, Taiwan, ROC
Session 34: Disruptive OLED Materials (OLEDs / Disruptive Materials)
Wednesday, June 3 / 3:30 – 4:50 pm / Ballroom 220C
Chair: Seth Coe-Sullivan, QD Vision, Inc.
Co-Chair: Sven Zimmermann, Novaled AG
34.1: Invited Paper: Effect of Singlet Triplet Recycling in the Charge-Transfer-State Manifold and Molecular Geometry on Thermally Activated Delayed Fluorescence
Andrew Monkman, Durham University, Durham, UK
34.2: Invited Paper: Highly Efficient and Stable OLEDs Using Hosts with Thermally Activated Delayed Fluorescence
Lian Duan, Tsinghua University, Beijing, China
34.3: Emitting Materials for Thermally Activated Delayed Fluorescent OLEDs Using Benzofurocarbazole and Benzothiophenocarbazole as Donor Moieties
Dong Ryan Lee, Dankook University, Yongin, South Korea
34.4: Invited Paper: Combinatorial Design of OLED-Emitting Materials
Alán Aspuru-Guzik, Harvard University, Cambridge, MA, USA

Session 35: Projection Optics (Projection)
Wednesday, June 3 / 3:30 – 4:50 pm / Room LL20A
Chair: John Vieth, Christie Digital Systems
Co-Chair: Ming Hsien Wu, Hamamatsu Corp
35.1: Auto-Calibration for Screen Correction and Point Cloud Generation
Jason Deglint, University of Waterloo, Waterloo, Ontario, Canada
35.2: Design of Hybrid Refractive-Reflective Projection Optics for Family Theatres
Xiao Wei Sun, Nanyang Technological University, Singapore
35.3: Resolution Enhancement Based on Shifted Superposition
Elnaz Barshan, University of Waterloo, Waterloo, Ontario, Canada
35.4: A High Contrast Ratio and Compact-Sized Prism for DLP Projection System
Jui-Wen Pan, National Chiao Tung University, Tainan, Taiwan, ROC

Session 36: Holographic 3D Displays (Display Systems)
Wednesday, June 3 / 3:30 - 4:50 pm / Room LL20BC
Chair: W. Hendrick, Rockwell Collins Optronics
Co-Chair: K. Käläntär, Global Optical Solutions
36.1: Binocular Holographic Display Using the Pupil Space Division Method
Jungkuwon An, SAIT, Samsung Electronics Co., Suwon, South Korea
36.2: Speckle Suppression in a Scaled Holographic Display from Single-Phase-Only Computer-Generated Hologram
Jun Xia, Southeast University, Nanjing, China
36.3: Flat-Panel Coherent Backlight for Holographic Displays with Improved Diffraction Efficiency
Yikai Su, Shanghai Jiao Tong University, Shanghai, China
36.4: Invited Paper: Real-Time Light Amplification by Using Photorefractive Ferroelectric Liquid-Crystal Mixtures
Takeo Sasaki, Tokyo University of Science, Tokyo, Japan

Session 37: Blue-Phase LCDs (Liquid-Crystal Technology)
Wednesday, June 3 / 3:30 – 4:50 pm / Room LL20D
Chair: Michael Wittek, Merck KGaA
Co-Chair: Shin-Tson Wu, University of Central Florida
37.1: A Blue-Phase LCD with Wall Electrode and High-Driving-Voltage Circuit
Cheng-Yeh Tsai, AU Optronics Corp., Hsinchu, Taiwan, ROC
37.2: High-Performance Blue-Phase LCDs Stabilized by Linear Photopolymers
Daming Xu, University of Central Florida, Orlando, FL, USA
37.3: Polymer-Stabilized Blue-Phase Liquid Crystal Cured with a Visible Laser
Yikai Su, Shanghai Jiao Tong University, Shanghai, China

Session 38: OLED Lighting (OLEDs / Lighting)
Wednesday, June 3 / 3:30 – 4:50 pm / Room LL20EF
Chair: Jang Hyuk Kwon, Kyung Hee University
Co-Chair: Franky So, University of Florida
38.1: TBA
38.2: High-Efficiency Three-Stack Tandem White OLEDs
Jang Hyuk Kwon, Kyung Hee University, Seoul, South Korea
38.3: Simulations, Measurements, and Optimization of OLEDs with a Scattering Layer
Stéphane Altazin, Fluxim AG, Winterthur, Switzerland
38.4: TBA

Session 39: Advanced TFTs (Active-Matrix Devices)
Thursday, June 4 / 9:00 – 10:20 am / Ballroom 220B
Chair: Hyun Jae Kim, Yonsei University
Co-Chair: Junho Song, Samsung Display Co., Ltd.
39.1: Invited Paper: High-Performance Flexible TFTs from Oxide/Carbon Heterostructures
Xiangfeng Duan, University of California at Los Angeles, Los Angeles, CA, USA
39.2: Invited Paper: Printed Inorganic Transistors Based on Transparent Oxides
Vivek Subramanian, University of California at Berkeley, Berkeley, CA, USA
Session 40: OLED Devices I (OLEDs)
Thursday, June 4 / 9:00 – 10:20 am / Ballroom 220C
Chair: Michael Weaver, Universal Display Corp.
Co-Chair: Denis Kondakov, DuPont Displays
40.2: Efficiency Enhancement in Phosphorescent and Fluorescent OLEDs Utilizing Energy Transfer from Exciplex to Emitter
Tatsuyoshi Takahashi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
40.3: Optimization of Host-Dopant System for Realizing Efficient Thermally Activated Delayed Fluorescence OLEDs
Min Chul Suh, Kyung Hee University, Seoul, South Korea
40.4: High-Efficiency Blue Phosphorescent OLEDs with >57 cd/A, >50 lm/W, and >25% External Quantum Efficiency
Jin-Haw Lee, National Taiwan University, Taipei, Taiwan, ROC

Session 41: Automotive Display Applications and Systems (Vehicular)
Thursday, June 4 / 9:00 – 10:20 am / Room LL20A
Chair: Jerzy Kanicki, University of Michigan
Co-Chair:
41.1: Development of RGBW LCD with Edge-Lit 2D Local-Dimming System for Automotive Applications
Naoyuki Takasaki, Japan Display, Inc., Kanagawa, Japan
41.2: High-Reliability Integrated Gate Driver Circuit in a Panel for Automotive Displays
Dalhe Sim, LG Display Co., Ltd., Gyeonggi-do, South Korea
41.3: Invited Paper: Megatrends Driving Automotive Displays and Associated Mega Issues
Paul M. Russo, GEO Semiconductor, Inc., San Jose, CA, USA
41.4: TBA

Session 42: Curved and High-Resolution Display Metrology (Display Measurement)
Thursday, June 4 / 9:00 – 10:20 am / Room LL20BC
Chair: Stephen Atwood, Azonix Corp.
Co-Chair: Frank Rochow, Adviser
42.1: Comparison of Key Optical Measurements of Curved to Flat LCD TVs and Their Impact on Image Quality
Karheinz Blankenbach, Pforzheim University, Pforzheim, Germany
42.2: Stress-Induced Substrate Mura in Curved LCDs
K. Hemanth Vepakomma, Corning Incorporated, Corning, NY, USA
42.3: Light-Leakage Study on Curved ADS-Mode LCDs
Jiaxiong You, BOE Technology Group Co., Ltd., Beijing, China
42.4: How to Perform Viewing-Angle Measurements on Curved Displays
Pierre Boher, ELDIM, Herouville, France

Session 43: FFS/IPS I (Liquid-Crystal Technology)
Thursday, June 4 / 9:00 – 10:20 am / Room LL20D
Chair: Hyun Chul Choi, LG Display Co., Ltd.
Co-Chair: Ki Chul Shin, Samsung Display Co., Ltd.
43.1: Invited Paper: UB-FFS: New Materials for Advanced Mobile Applications
Martin Engel, Merck Group, Darmstadt, Germany
43.2: New Fast-Response-Time IPS Liquid-Crystal Mode
Toshiharu Matsushima, Japan Display, Inc., Ebina, Japan
43.3: Fast-Response-Time Fringe-Field-Switching LCD with Patterned Common Electrode
Daming Xu, University of Central Florida, Orlando, FL, USA
43.4: A Fast-Response A-Film-Enhanced FFS-LCD
Haiwei Chen, University of Central Florida, Orlando, FL, USA

Session 44: Advanced Light Sources, Components, and Systems I (IES Lighting Track)
Thursday, June 4 / 9:00 – 10:20 am / Room LL20EF
Chair: Mike Lu, Acuity Brands Lighting
Co-Chair: David Aurelien, Soraa, Inc.
44.1: Invited Paper: OLED Lighting for General Lighting Applications
Seongsoo Jang, LG Chem, Ltd., Cheong, South Korea
44.2: Invited Paper: Current and Future Projection of Edge-Lit LED Panel Adoption in Lighting
Brett Shriver, Global Lighting Technology, Brecksville, OH, USA
44.3: Display Technologies for LED Lighting. Part I: Optical Components
William Edmonds, 3M Co., St. Paul, MN, USA
44.4: Display Technologies for LED Lighting. Part II: Scalable Optical Architectures Enabled by Modular Film-Based Components
William Edmonds, 3M Co., St. Paul, MN, USA
Session 45: High-Performance Oxide TFTs I (Active-Matrix Devices)
Thursday, June 4 / 10:40 am – 12:00 pm / Ballroom 220B
Chair: Hsing-Hung Hsieh, Polyera Taiwan Corp.
Co-Chair: Roger Stewart, Sourland Mountain Associates
45.1: Invited Paper: Future Possibilities of Crystalline Oxide Semiconductors, Especially C-Axis-Aligned Crystalline IGZO
Shunpei Yamazaki, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
45.2: Sputtering C-Axis-Aligned Crystalline (CAAC) IGZO Films: A Design of Experiment (DOE) Study
Michael Thompson, Ithaca, NY, USA
45.3: Invited Paper: High-Performance Nanocrystalline ZnOxNy for Imaging and Display Applications
Eunha Lee, SAIT, Samsung Electronics Co., Suwon, South Korea
45.4: Invited Paper: Amorphous-Metal-Oxide/1D Nanomaterial Hybrid TFTs: A New Avenue to High-Speed Macroelectronics
Lei Liao, Wuhan University, Wuhan, China

Session 46: OLED Devices II (OLEDs)
Thursday, June 4 / 10:40 am – 12:00 pm / Ballroom 220C
Chair: Eric Forsythe, Army Research Laboratory
Co-Chair: Denis Kondakov, DuPont Displays
46.1: Invited Paper: Recent Progress of LEDs Based on Colloidal Quantum Dots
Changhee Lee, Seoul National University, Seoul, South Korea
46.2: Transparent Inverted OLEDs with a Multilayered Graphene Top Anode Using a Novel Lamination Technique
Jeong-Il Lee, ETRI, Daejeon, South Korea
46.3: Anchoring Energy of PEDOT:PSS Alignment Layer for High-Order Parameter and Polarized Luminescence of Organic Dyes
Andrew Stankevich, Institute of Chemistry of New Materials, National Academy of Sciences Belarus, Minsk, Belarus
46.4: Effects of Electron-Injection Layer on Storage and Operational Stability of Air-Stable OLEDs
Hirohiko Fukagawa, NHK Science & Technology Research Laboratories, Tokyo, Japan

Session 47: Next-Generation Automotive Display Technologies I: HUDs (Display Systems / Vehicular)
Thursday, June 4 / 10:40 am - 12:00 pm / Room LL20A
Chair: Rashmi Rao, Harman International
Co-Chair: Masaru Suzuki, SKC Haas Display Films
47.1: TBA
47.2: Invited Paper: Laser-Scanning Head-Up Display for Better Driving Assistance
Koichiro Nakamura, Ricoh Co., Ltd., Yokohama, Japan
47.3: TBA
47.4: TBA

Session 48: Display Standards and Their Application to Transparent Displays (Display Measurement)
Thursday, June 4 / 10:40 am – 12:00 pm / Room LL20BC
Chair: Thomas Fiske, Consultant
Co-Chair: Marja Salminmaa, Nokia Research Center
48.1: Invited Paper: Recent Advances in the Standardization of Display Metrology and Light Measurement
Michael Becker, Instrument Systems GmbH, Munich, Germany
48.2: Invited Paper: Recent Developments in Standardization in IEC TC 110, Electronic Display Devices: Reflecting Market Interests
Kei Hyodo, Konica Minolta, Inc., Hachioji, Japan
48.3: Optical Measurement Method for Transparent LCDs
Xinli Ma, BOE Technology Group Co., Ltd., Beijing, China
48.4: General Metrology Framework for Determining the Ambient Optical Performance of Flat-Panel Displays
John Penczek, University of Colorado, Boulder, CO, USA, and National Institute of Standards and Technology, Boulder, CO, USA
48.5: Optical Measuring Methods for Transparent Displays
John Penczek, University of Colorado, Boulder, CO, USA, and National Institute of Standards and Technology, Boulder, CO, USA

Session 49: FFS/IPS II (Liquid-Crystal Technology)
Thursday, June 4 / 10:40 am – 12:00 pm / Room LL20D
Chair: Takahiro Ishinabe, Tohoku University
Co-Chair: Jae Hoon Kim, Hanyang University
49.1: Invited Paper: n-FFS vs. p-FFS: Who Wins?
Shin-Tson Wu, University of Central Florida, Orlando, FL, USA
49.2: Image-Sticking Reduction of FFS-LCDs
Daming Xu, University of Central Florida, Orlando, FL, USA
49.3: Analysis of Press Mura in FFS-LCDs
Yu-Ling Yeh, AU Optronics Corp., Hsinchu, Taiwan, ROC
49.4: A High-Transmittance IPS LC Mode Using a New Self-Aligned Structure
Sun-Hwa Lee, LG Display Co., Ltd., Gyeonggi-do, South Korea

Session 50: Effect of Lighting on Health and Perception (IES Lighting Track)
Thursday, June 4 / 10:40 am – 12:00 pm / Room LL20EF
Chair: James Larimer, ImageMetrics LLC
Co-Chair: Ingrid Heynderickx, Eindhoven University of Technology
50.1: Invited Paper: The Importance of Melanopsin Activation in Perception, Health, and Lighting Design
Dingcai Cao, University of Illinois at Chicago, Chicago, IL, USA
Session 51: High-Performance Oxide TFTs II (Active-Matrix Devices)
Thursday, June 4 / 1:30 – 2:50 pm / Ballroom 220B
Chair: Kalluri Sarma, Honeywell, Inc.
Co-Chair: Tohru Nishibe, Japan Display, Inc.
51.1: a-IGZTO TFTs with High Mobility and Reliability
Chih-Yu Su, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China
51.2: Development of a High-Mobility Zinc-Oxynitride TFT for AMOLED Displays
Liangchen Yan, BOE Technology Group Co., Ltd., Beijing, China
51.3: A Mobility-Enhancing Method Adopting a Multi-Active-Layer Structure in TFTs
Ming-Yen Tsai, National Sun Yat-Sen University, Kaohsiung, Taiwan, ROC

Session 52: OLED Devices III (OLEDs)
Thursday, June 4 / 1:30 – 2:50 pm / Ballroom 220C
Chair: Sven Zimmermann, Novaled AG
Co-Chair: Yasunori Kijima, JOLED, Inc.
52.1: Analysis of Self-Heating and Negative Capacitance in Organic Semiconductor Devices
Evelyne Knapp, Zurich University of Applied Sciences, Winterthur, Switzerland
52.2: Non-Destructive Analyses of Operational Degradation of OLED Devices
Toshijiro Yoshioka, Chemical Materials Evaluation Research Base (CEReba), Tsukuba, Japan
52.3: Exciton Management in Non-Doped Ultra-Thin Emissive-Layer-Based OLED Displays
Te Tan, Shanghai Jiao Tong University, Shanghai, China

Session 53: Touch, Interactivity, and Human-Machine Interface (Vehicular / Touch and Interactivity)
Thursday, June 4 / 1:30 – 2:50 pm / Room LL20A
Chair: Silviu Pala, Denso International America
Co-Chair:
Beomshik Kim, Samsung Display Co., Ltd., Yongin, South Korea
53.2: Visual Search and Attention: What Eye-Tracking Reveals about Visual Performance in the Curved Display
Hyeon-Jeong Suk, KAIST, Daejeon, South Korea
53.3: TBA
53.4: Metal-Mesh Design for High-ppi LCD Application
Chun Chen, General Interface Solution, Ltd., Miaoli, Taiwan, ROC

Session 54: Transparent Display Systems (Display Systems)
Thursday, June 4 / 1:30 – 2:50 pm / Room LL20BC
Chair: Bill Cummings, BYDU Technology Services
Co-Chair: Jean-Pierre Guillou, Apple, Inc.
54.1: A Switched Emissive Transparent Display with Controllable Per-Pixel Opacity
Quinn Smithwick, Disney Research, Glendale, CA, USA
54.2: A Novel Flat-Type Transparent LCD
Chia-Wei Kuo, AU Optronics Corp., Hsinchu, Taiwan, ROC
54.3: A Polymer-Stabilized Cholesteric Texture (PCST) for Switchable Transparent LCDs
AliReza Moheghi, Liquid Crystal Institute, Kent State University, Kent, OH, USA
54.4: High-Contrast Smart-Window OLED Device with New Black-Screen Technique
Jung Hyuk Kwon, Kyung Hee University, Seoul, South Korea

Session 55: LC Beyond Displays (Liquid-Crystal Technology)
Thursday, June 4 / 1:30 – 2:50 pm / Room LL20D
Chair: Philip Chen, National Chiao Tung University
Co-Chair: Xiaoyang Sun, Chinese Academy of Sciences
55.1: Invited Paper: Liquid Crystals for Smart Antennas and Other Microwave Applications
Michael Wittek, Merck KGaA, Darmstadt, Germany
55.2: Invited Paper: Rethinking Wireless Communications: Advanced Antenna Design Using LCD Technology
Ryan Stevenson, Kymeta Corp., Redmond, WA, USA
55.3: A Low-Voltage Fast-Response IR Spatial Light Modulator
Fenglin Peng, University of Central Florida, Orlando, FL, USA

Session 56: Advanced Lighting Applications (IES Lighting Track)
Thursday, June 4 / 1:30 – 2:50 pm / Room LL20EF
Chair: Ingrid Heynderickx, Eindhoven University of Technology
Co-Chair: Po-Chieh Hung, Konica Minolta Sensing
Session 57: Oxide and LTPS TFTs (Active-Matrix Devices / Oxide and LTPS TFTs)
Thursday, June 4 / 3:10 – 4:30 pm / Ballroom 220B
Chair: James Chang, Apple, Inc.
Co-Chair: Norbert Fruehauf, University of Stuttgart
57.1: Invited Paper: High-Performance Poly-Si TFTs Using Pressure-Induced Nucleation Technology
Myung-Koo Kang, Samsung Electronics Co., Gyeonggi-do, South Korea
57.2: Electrical Characterization of BCE-TFTs with IGZO Oxide Semiconductor Compatible with Cu and Al Interconnections
Mototaka Ochi, Kobe Steel, Ltd., Kobe, Japan
57.3: New Pixel Circuits for Controlling Threshold Voltage by Back-Gate Bias Voltage Using Crystalline-Oxide-Semiconductor FETs
Makoto Kaneyasu, Semiconductor Energy Laboratory, Co., Ltd., Kanagawa, Japan
57.4: Invited Paper: Device Physics of Amorphous-Oxide TFTs
Ananth Dodabalapur, The University of Texas at Austin, Austin, TX, USA

Session 58: OLED Displays I (OLEDs)
Thursday, June 4 / 3:10 – 4:30 pm / Ballroom 220C
Chair: Tariq Ali, eMagin Corp.
Co-Chair: Chin Hsin (Fred) Chen, Guangdong Aglaia Optoelectronic Materials Co., Ltd.
58.1: A Study of Adaptive Temporal Aperture Control for OLED Displays with Motion Vector
Takenobu Usui, NHK Science & Technology Research Laboratories, Tokyo, Japan
58.2: High-Performance Large-Sized OLED TV with UHD Resolution
Yu-Hung Chen, AU Optromics Corp., Hsinchu, Taiwan, ROC
58.3: A Novel Highly Transparent 6-in. AMOLED Display Consisting of IGZO TFTs
Chia-Tse Lee, Chungwa Picture Tubes, Taoyuan, Taiwan, ROC
58.4: A 31-in. 4K x 2K WRGB AMOLED TV with a High-Stability IGZO Backplane
Chih-Yu Su, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China

Session 59: Next-Generation Automotive Display Technologies II: Flexible, Curved, Coatings (Vehicular)
Thursday, June 4 / 3:10 – 4:10 pm / Room LL20A
Chair: Takatoshi Tsujimura, Konica Minolta, Inc.
Co-Chair: TBA
59.1: TBA
59.2: Highly Stable and Transparent Oxide TFTs for Rollable Displays
Jin Jang, Kyung Hee University, Seoul, South Korea
59.3: Functional Transparent Coatings for Displays
Songwei Lu, PPG Industries, Inc., Allison Park, PA, USA
59.4: A Curved Cover with Carbon-NanoBud Touch for Mobile Applications
Erkki Soininen, Canatu Oy, Helsinki, Finland

Session 60: Capacitive Touch (Touch and Interactivity)
Thursday, June 4 / 3:10 – 4:30 pm / Room LL20BC
Chair: Jeff Han, Microsoft
Co-Chair: John Zhong, Apple, Inc.
60.1: A Capacitive Touch Panel for Simultaneous Detection of Non-Conductive and Conductive Objects
Christopher Brown, Sharp Laboratories of Europe, Oxford, UK

Session 61: Liquid-Crystal Lenses (Liquid-Crystal Technology)
Thursday, June 4 / 3:10 – 4:30 pm / Room LL20D
Chair: Philip Bos, Kent State University
Co-Chair: Hoi-Sing Kwok, Hong Kong University of Science & Technology
61.1: Variable-Lens-Pitch LC GRIN Lens for Adapting a 3D Viewing Angle
Ayako Takagi, Toshiba Corp., Kawasaki, Japan
61.2: Dependence of Optical Power of an LC Lens on Cell Gap
Mao Ye, SuperD Co., Ltd., Shenzhen, China
Philip Bos, Liquid Crystal Institute, Kent State University, Kent, OH, USA

Session 62: Advanced Light Sources, Components, and Systems II (IES Lighting Track)
Thursday, June 4 / 3:10 – 4:30 pm / Room LL20EF
Chair: Bob Horner, IES
Co-Chair: Mike Lu, Acuity Brands Lighting

62.1: Invited Paper: Application-Specific Spectral Power Distributions of White Light
Po-Chieh Hung, Konica Minolta Laboratory U.S.A., Inc., San Mateo, CA, USA

62.2: Invited Paper: LED Life vs. LED System Life
Nadarajah Narendran, Lighting Research Center, Troy, NY, USA

Shih-Yu Tu, GIPO and National Taiwan University, Taipei, Taiwan, ROC

Session 63: High-Resolution Displays (Active-Matrix Devices / Oxide and LTPS TFTs)
Friday, June 5 / 9:00 – 10:20 am / Ballroom 220B
Chair: Man Wong, Hong Kong University of Science & Technology
Co-Chair: Kenichi Takatori, NLT Technologies, Ltd.

63.1: An Ultra-High-Density 736-ppi LCD Using an InGaZnO Platform
Naoki Ueda, Sharp Corp., Nara, Japan

63.2: A 2K x 4K 550-ppi In-Cell Touch TFT-LCD Using 1.5-µm Channel-Width LTPS TFTs
Takashi Nakamura, Japan Display, Inc., Saitama, Japan

63.3: High-Performance 4K x 2K 65-in. TV with BCE-Type Oxide TFTs
Bo-Liang Yeh, AU Optronics Corp., Hsinchu, Taiwan, ROC

Session 64: OLED Displays II: Curved and High Resolution (OLEDs / Curved and High-Resolution Displays)
Friday, June 5 / 9:00 – 10:20 am / Ballroom 220C
Chair: Yusin Lin, AU Optronics Corp.
Co-Chair: Changwoong Chu, Samsung Display Co., Ltd.

64.1: Slim Design of an 65-in. UHD OLED TV
Koichi Miwa, LG Display Co., Ltd., Gyeonggi-do, South Korea

64.2: Panel and Circuit Designs for the World’s First 65-in. UHD OLED TV
Ryoke Tani, LG Display Co., Ltd., Gyeonggi-do, South Korea

64.3: Development of 55-in. UHD AMOLED TV
Zhong-Yuan Wu, BOE Technology Group Co., Ltd., Beijing, China

Session 65: Flexible Display Technology (e-Paper and Flexible Displays)
Friday, June 5 / 9:00 – 10:20 am / Room LL20A
Chair: Janglin Chen, DTC/ITRI
Co-Chair: Chuyu Liu, AU Optronics Corp.

65.1: Invited Paper: World’s First Large-Sized 18-in. Flexible OLED Display and Key Technologies
Jong-Geeun Yoon, LG Display Co., Ltd., Gyeonggi-do, South Korea

65.2: Invited Paper: Bias-Stress-Induced Charge Trapping at Flexible Polymer Gate Dielectric in Organic TFTs
Kilwon Cho, Pohang University of Science and Technology, Pohang, South Korea

65.3: Development of Flexible Displays Using Back-Channel-Etched In–Sn–Zn–O TFTs and Air-Stable Inverted OLEDs
Mitsuru Nakata, NHK Science & Technology Research Laboratories, Tokyo, Japan

65.4: Organic-TFT-Driven Backplane for Flexible Electrophoretic Display
Wen-Chung Tang, E Ink Holding, Inc., Hsinchu, Taiwan, ROC

Session 66: Stereoscopic 3D Displays (Display Systems / Projection)
Friday, June 5 / 9:00 – 10:20 am / Room LL20BC
Chair: Fujio Okumura, NEC Corp.
Co-Chair: Han Ping Shieh, Display Institute, National Chiao Tung University

66.1: Feasibility of 3D Cinema with Uncompromised Performance
Gary Sharp, RealD, Boulder, CO, USA

66.2: Tracked Automultiscopic 3D Tablettop
Quin Smithwick, Disney Research, Glendale, CA, USA

66.3: Smooth-Motion-Parallax Autostereoscopic 3D Display Using Linear Blending of Viewing Zones
Munekazu Date, NTT Media Intelligence Laboratories, Nippon Telegraph and Telephone Corp., Kanagawa, Japan

66.4: Invited Paper: Circularly Polarized (CPL) 3D Monitors Attract Attention Again for Medical Applications
Takahito Tanabe, Arisawa Manufacturing Co., Ltd., Niigata, Japan

Session 67: Photo Alignment (Liquid-Crystal Technology)
Friday, June 5 / 9:00 – 10:20 am / Room LL20D
Chair: Cheng Chen, Apple, Inc.
Co-Chair: Matthew Sousa, 3M Co.

67.1: Reactive Mesogen Stabilized Azodye Alignment for High-Contrast Displays
Valerie Finnemeyer, Liquid Crystal Institute, Kent State University, Kent, OH, USA

67.2: Fabrication of a Zero-Pretilt Liquid-Crystal Cell Using UV-Curable Polymer
Tae-Hoon Yoon, Pusan National University, Busan, South Korea

67.3: Photo-Stable Azo-Dye Photo-Alignment polymer Surface for IPS-LCDs
Man Chun Tsang, Hong Kong University of Science and Technology, Kowloon, Hong Kong
Session 68: Touch Systems and Materials (Touch and Interactivity / Display Manufacturing / Vehicular)
Friday, June 5 / 9:00 – 10:20 am / Room LL21EF
Chair: Willem den Boer, Guardian Industries
Co-Chair: Reiner Mauch, Schott AG
68.1: **Invited Paper:** Panel-Structure Evolution of In-Cell Capacitive Touch Sensor
Qijun Yao, Shanghai Tianma Microelectronics Co., Ltd., Shanghai, China
68.2: Study of the Optimized Design for High-Resistance Black Matrix at In-Cell Touch Structure
Younsung Na, LG Display Co., Ltd, Gyeonggi-do, South Korea

Session 69: Oxide-TFT Reliability (Active-Matrix Devices)
Friday, June 5 / 10:40 am – 12:00 pm / Ballroom 220B
Chair: Yoshitaka Yamamoto, Semiconductor Energy Laboratory Co., Ltd.
Co-Chair: Hyun Jae Kim, Yonsei University
69.1: **Invited Paper:** Advantages of the Self-Aligned Top-Gate Oxide-TFT Technology for AMOLED Displays
Toshiaki Arai, JOLED, Inc., Kanagawa, Japan
69.2: Highly Reliable a-IGZO TFTs with Self-Aligned Coplanar Structure for Large-Sized UHD OLED TV
Chanki Ha, LG Display Co., Ltd., Gyeonggi-do, South Korea
69.3: a-IGZO TFT Reliability Improvement by Using a Dual-Gate Structure
Kuo-jui Chang, AU Optronics Corp., Hsinchu, Taiwan, ROC

Session 70: OLED Displays III (OLEDs)
Friday, June 5 / 10:40 am – 12:00 pm / Ballroom 220C
Chair: C. C. Lee, BOE Technology Group Co., Ltd.
Co-Chair: Yustin Lin, AU Optronics Corp.
70.1: High-Resolution OLED Display with the Lowest Level of Power Consumption Using a Blue/Yellow Tandem Structure and RGBY Subpixels
Ryohei Yamaoka, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
70.2: An 81-in. 8K x 4K OLED Kawara-Type Multidisplay Providing a Seamless Continuous Image
Hisao Ikeda, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
70.3: Low-Power-Consumption and Wide-Color-Gamut AMOLED Display Having Four Primary Colors
Chung-Chia Chen, AU Optronics Corp., Hsinchu, Taiwan, ROC
70.4: A 2.78-in 1058-ppi UHD OLED Display Using CAAC-OFS ETS
Kohei Yokoyama, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 71: Flexible Encapsulation (e-Paper and Flexible Displays)
Friday, June 5 / 10:40 am – 12:00 pm / Room LL20A
Chair: Kyung Cheol Choi, KAIST
Co-Chair: Bo-Ru Yang, Sun Yat-Sen University
71.1: High-Throughput and Scalable Spatial Atomic Layer Deposition of Al₂O₃ as a Moisture Permeation Barrier for a Flexible OLED Display
Haeyoung Choi, LIG ADP Co., Ltd., Seongnam, South Korea
71.2: Mechanical Characteristics of Flexible AMOLED Displays
Ju-Feng Chen, AU Optronics Corp., Hsinchu, Taiwan, ROC
71.3: Quantification of Water Penetration and Degradation through Adhesives Applicable to Flexible OLED Design
Yoshiko Ohashi, Chemical Materials Evaluation and Research Base (CERB), Ibaraki, Japan

Session 72: Curved or High-Resolution Large Displays (Display Systems / Curved and High-Resolution Displays)
Friday, June 5 / 10:40 am – 12:00 pm / Room LL20BC
Chair: Wei Chen, Apple, Inc.
Co-Chair: Brian Berkeley, Independent
72.1: World’s First 55-in. 120-Hz-Driven 8K x 4K IPS-LCDs with Wider Color Gamut
Ryohei Oke, Panasonic Liquid Crystal Display Co., Ltd., Himeji, Japan
72.2: Development and Analysis of Technical Challenges in the World's Largest (110-in.) Curved LCD
Ken Hsiao, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China
72.3: The Mechanical Reliability of Glass Displays in Bending
K. Hemant Vepakomma, Corning Incorporated, Corning, NY, USA
72.4: Development of a Laser Optical System for a 4K Laser-Backlit LCD TV
Nami Okimoto, Mitsubishi Electric Corp., Advanced Technology R&D Center, Nagakakyo, Japan

Session 73: Ultra-Low-Power LCDs (Liquid-Crystal Technology)
Friday, June 5 / 10:40 am – 12:00 pm / Room LL20D
Chair: Gang Xu, Hewlett-Packard Co.
Co-Chair: Akihito Mochizuki, J-CORE Technology, LLC
73.1: A Novel Pixel Structure for High-Transmittance and High-Image-Quality LCDs
Joon-Dong Lee, LG Display Co., Ltd., Gyeonggi-do, South Korea
73.2: A Novel TFT Pixel and Driving Scheme of Electrically Suppressed-Helix FLC for Active-Matrix FPDs
Tsz Kiu Ho, Hong Kong University of Science and Technology, Kowloon, Hong Kong
73.3: Elimination of Image Flicker in an FFS Mode under Low-Frequency Driving
Tae-Hoon Yoon, Pusan National University, Busan, South Korea
73.4: Reflective LCD with High Reflectivity and Color Reproductivity for Reduced Eye Strain
Daisuke Kubota, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
**Session 74: Touch Applications (Touch and Interactivity)**

Friday, June 5 / 10:40 am – 12:00 pm / Room LL20EF

**Chair:** Deuksu Lee, LG Display Co., Ltd.

**Co-Chair:** Bob Senior, Canatu Oy

74.1: A Novel Near-Field Three-Dimensional User-Interface Technology  
Russ Gruhlke, Qualcomm Technologies, Santa Clara, CA, USA

74.2: Invited Paper: What Lies Beyond Multitouch?  
Chris Harrison, Carnegie-Mellon University, Pittsburgh, PA, USA

**Poster Session**

Thursday, June 5 / 4:00 – 7:00 pm / Ballroom 220A

**Active-Matrix Devices**

P.1: Current-Supplying Driving Method of Active-Matrix Ionic Polymer-Metal Composites for Stereoscopic Displays  
Mutsumi Kimura, Ritsukou University, Otsu, Japan

P.2: A Novel Method for LTPS Model Extraction with Hysteresis and Transient Current Analysis  
Chen-Hao Kuo, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.3: A New LTPS Pixel Circuit for Compensating the Variation of TFT Characteristics and Alleviating OLED Degradation  
Wei-Chu Hsu, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.4: Feasibility Study of a Dual-Gate Photosensitive TFT for Fingerprint-Sensor-Integrated Active-Matrix Display  
Kai Wang, Sun Yat-Sen University – Carnegie-Mellon University Joint Institute of Engineering, Guangdong, China

P.5: Oxide Semiconductor/Polypropylene Carbonate Paste for a TFT Using Screen Printing  
Akinari Matoba, Industrial Research Institute of Ishikawa, Ishikawa, Japan

P.6: Impact of Buffer Layers on the Self-Aligned Top-Gate a-IGZO TFT Characteristics  
Manoj Nag, imec, Leuven, Belgium

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