ADVANCE PROGRAM

2017 DISPLAY WEEK INTERNATIONAL SYMPOSIUM

May 23-26, 2017 (Tuesday – Friday)
Los Angeles Convention Center
Los Angeles, California, USA

Session 1: Annual SID Business Meeting
Tuesday, May 23 / 8:00 – 8:20 am / Concourse Hall 151-153

Session 2: Opening Remarks / Keynote Addresses
Tuesday, May 23 / 8:20 – 10:20 am / Concourse Hall 151-153
Chair: Seonki Kim, Sungkyunkwan University, Suwon, South Korea

2.1: ***Keynote Address 1:*** **The Warring States Era of Display Technologies**
Paul Peng, CEO, AU Optronics Corp., Hsinchu, Taiwan, ROC

2.2: ***Keynote Address 2:*** **Enabling Rich and Immersive Experiences in Virtual and Augmented Reality**
Clay Bavor, Vice President of Virtual Reality, Google, Inc., Mountain View, CA, USA

2.3: ***Keynote Address 3:*** ***Humanizing the Autonomous Car Experience***
Sanjay Dhawan, President, Connected Services, Harman International, Stamford, CT, USA

Session 3: OLED Devices I *(OLEDs)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 515A
Chair: *Yasunori Kijima, Huawei Technologies Co. Ltd.*
Co-Chair: *Yifan Zhang, Apple, Inc.*

3.1: ***Invited Paper:*** **3-Stack 3-Color White OLEDs for 4K Premium OLED TV**
Chang-Wook Han, LG Display Co.,Ltd., Gyeonggi-do, South Korea

3.2: ***Invited Paper:*** **Color-on-Demand – Color-Tunable OLEDs for Lighting and Displays**
Malte Gather, University of St. Andrews, St. Andrews, UK

3.3: **Influence of Vacuum-Chamber Impurities on OLED Degradation**
Hiroshi Fujimoto, Fukuoka i3-Center for Organic Photonics and Electronics Research, Fukuoka, Japan

3.4: **Ultra-Wide-Color-Gamut OLED display Using a Deep-Red Phosphorescent Device with High Efficiency, Long Lifetime, Thermal Stability, and Absolute BT.2020 Red Chromaticity**
Shunsuke Hosoumi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 4: AR/VR Invited Session I *(Augmented Reality and Virtual Reality)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 515B
Chair: *Achin Bhowmik, Intel Corp.*
Co-Chair: *Nikhil Balram, Google, Inc.*

4.1: ***Invited Paper:*** **Mobile AR in Your Pocket with Google Tango†**
Johnny Lee, Google, Mountain View, CA USA

4.2: ***Invited Paper:*** **Project Alloy: An All-In-One Virtual and Merged Reality Platform**
Dimitri Diakopoulos, Intel Corporation, Santa Clara, CA USA

4.3: ***Invited Paper:*** **Optimizing Virtual Reality User Experience through Adaptive Focus Displays and Gaze Tracking Technology**
Robert Konrad, Stanford University, Stanford, CA USA

4.4: ***Invited Paper:*** **An End-To-End Virtual Reality Live Streaming Solution**
Uma Jayaram, Intel Corporation, Santa Clara, CA USA

Session 5: Flexible/Stretchable/Wearable Displays *(Wearable Displays / e-Paper and Flexible Displays)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 502A
Chair: *Bo-Ru (Paul) Yang, Sun Yat-Sun University, Guangzhou, P. R. China*
Co-Chair: *Chao-Yuan Chen, Jiangsu Hecheng Display Technology*

5.1: ***Invited Paper:*** **Booming Flexible Applications Enabled by AMOLED Technologies**
Yu-Hsin Lin, AU Optronics Corp., Hsinchu, Taiwan, ROC

5.2: ***Invited Paper:*** **Ultra-Thin Stretchable Oxide TFTs and AMOLEDs**
Seong-Deok Ahn, ETRI, Daejeon, South Korea

5.3: ***Distinguished Paper:*** **Power Savings through State Retention in IGZO-TFT AMOLED Displays for Wearable Applications**
Soeren Steudel, imec, Leuven, Belgium

5.4: **Stretchable Oxide TFTs for Wearable Electronics**
Jin Jang, Kyung Hee University, Seoul, South Korea

5.5: ***Late-News Paper/ Distinguished Paper:*** **The First 9.1" Stretchable AMOLED Display based on LTPS Technology**
Jong-Ho Hong, Samsung Display Co., Ltd., Yongin-Si, South Korea

Session 6: Quantum-Dot LEDs I *(Emissive Displays)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 502B
Chair: *Chang Hee Lee, Seoul National University*
Co-Chair: *Jin Jang, Kyung Hee University*

6.1: *Invited Paper:* **Quantum-Dot Electroluminescence to Achieve Saturated Colors for Rec.2020 Compatibility: A Comparative Study of CdSe/ZnS and InP/ZnS**
Poopathy Kathirgamanathan, Brunel University, London, U.K.

6.2: *Invited Paper:* **Key Challenges towards the Commercialization of Quantum-Dot LEDs**
Lei Qian, TCL Research Group, Shenzhen, P. R. China

6.3: **Quantum-Dot LEDs: Problems and Prospects**
Paul Holloway, NanoPhotonica, Alachua, FL, USA

6.4: **Influence of Hole-Transporting Layer Thickness on Quantum-Dot LEDs**
Xiaolong He, BOE Technology Group Co., Ltd., Bejing, China

Session 7: Advanced Integrated Circuits *(Active-Matrix Devices)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 501
Chair: *Kazuyoshi Omata, Konica Minolta*
Co-Chair: *Takashi Nakamura, Japan Display Inc.*

7.1: *Invited Paper:* **Application of Low-Frequency Clock Signals to Gate Driver Circuits**
Chih-Lung Lin, National Cheng Kung University, Tainan, Taiwan, ROC

7.2: **Design of Highly Reliable Depletion-Mode a-IGZO TFT Gate Driving Circuit for 31-in. 8K x 4K 287-ppi TFT-LCD**
Long-Qiang Shi, Shenzhen China Star Optoelectronics Technology Co., Ltd., Guangdong, China

7.3: **An Ultra-Low-Power ESL a-IGZO TFT Gate Driver Using a Novel Bootstrap Technique**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

7.4: *Invited Paper:* **Internal-Compensation-Type OLED Display Using High-Mobility Oxide TFTs**
Yong Ho Jang, LG Display Co., Ltd., Gyeonggi-do, South Korea

Session 8: Materials and Devices for Lighting *(Lighting)*
Tuesday, May 23, 2017 / 11:10 am - 12:30 pm / Room 503
Chair: *Marina Kondakova, OLEDWorks*

8.1: **Three-Primary-Color Laser-Diode Module**
Seiji Nagahara, Nichia Corp., Yokohama, Japan

8.2: *Invited Paper:* **A New Generation of Luminescent Materials Based on Low-Dimensional Perovskites**
Osman Bakr, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia

8.3: *Invited Paper:* **Light Steering HDR Projections Systems**
Wolfgang Heidrich, King Abdullah University of Science and Technology and University, Thuwal, Saudi Arabia

8.4: *Invited Paper:* **Amber OLED Lighting Technology Development and Application**
David Lee, OLEDWorks LLC, Rochester, NY, USA

Session 9: Advanced Driving Circuits I *(Display Electronics)*
Tuesday, May 23, 2017 / 11:10 am - 12:40 pm / Room 518
Chair: *Oh-Kyong Kwon, Hanyang University*
Co-Chair: *Seung-Woo Lee, Kyung Hee University*

9.1: **An Ultra-Narrow-Border In-Cell-Touch TFT-LCD by Using TGP and OTSD Technology with New S/R Circuit**
Cheng-Chieh Lee, AU Optronics Corp., Hsinchu, Taiwan, ROC

9.2: **An Integrated a-Si Gate Driver for Advanced In-Cell-Touch (AIT) Technology**
Seung-Wan Cho, LG Display Co., Ltd., Gyeonggi-do, South Korea

9.3: **A Display System for 8K x 4K Using Low-Cost FPGA Devices**
Ran Duan, BOE Technology Group Co., Ltd., Beijing, P. R. China

9.4: **Simple Gate Driver Circuit with Inserted Stage for In-Cell-Touch TFT-LCD Applications**
Chih-Lung Lin, National Cheng Kung University, Tainan, Taiwan, ROC

9.5: *Late-News Paper:* **6Gb/s Ultra Definition Display Interface (UDDI) for Large-size 8K Displays**
Amir Amirkhany, Samsung Semiconductor Inc., San Jose, CA, USA

Session 10: OLED Devices II *(OLEDs)*
Tuesday, May 23, 2017 / 2:00 pm - 3:20 pm / Room 515A
Chair: *Hitoshi Kuma, Idemitsu Kosan Co., Ltd.*
Co-Chair: *Sven Zimmermann, Novaled GmbH*

10.1: *Invited Paper:* **OLED-Lifetime Improvement with Exciplex Sensitizer Triplet-Triplet Annihilation OLED Lifetime Improvement with Exciplex Sensitizer Triplet-Triplet Annihilation**
Jiun-Haw Lee, National Taiwan University, Taipei, Taiwan, ROC

10.2: *Invited Paper:* **Unified Analysis of Transient and Steady-State Electroluminescence: Establishing an Analytical Formalism for OLED Charge Balance**
Russell Holmes, University of Minnesota, Minneapolis, MN, USA

10.3: *Invited Paper:* **Organic Vapor Jet Printing: A Solvent-Less Mask-Less Patterning Technology for OLED Displays**
William Quinn, Universal Display Corp., Ewing, NJ, USA

10.4: **A 13.3-in. 8K x 4K 664-ppi 120-Hz 12-bit Display with a Super-Wide Color Gamut for the BT.2020 Standard**
Toshiki Sasaki, Semiconductor Energy Laboratory Co., Ltd, Kanagawa, Japan

Session 11: AR/VR Invited Session II *(Augmented Reality and Virtual Reality)*
Tuesday, May 23, 2017 / 2:00 - 3:20 pm / Room 515B
Chair: *Nikhil Balram, Google, Inc.*
Co-Chair: *Achin Bhowmik, Intel Corp.*

11.1: *Invited Paper:* **Towards the Ultimate Mixed Reality Experience: HoloLens display Architecture Choices**
Bernard Kress, Microsoft Corporation, Redmond, WA USA

11.2: *Invited Paper:* **Meta 2: Immersive Optical-See-Through Augmented Reality**

Kari Pulli, Meta Co., San Mateo, CA USA

11.3: ***Invited Paper:*** **Lumus Optical Technology for AR**
Aviv Frommer, Lumus Ltd., Rehovot, Israel

11.4: ***Invited Paper:*** **Direct View Optics for Near-Eye Displays**
Andrew Gross, Avegant Corporation, Belmont, CA USA

Session 12: Wearable Sensors and Materials *(Wearable Displays / e-Paper and Flexible Displays)*

Tuesday, May 23, 2017 / 2:00 - 3:20 pm / Room 502A

Chair: *Yong Taek Hong, Seoul National University*

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

12.1: ***Invited Paper:*** **Stretchable Transparent Electrodes Based on Silver Nanowires**
Qibing Pei, University of California at Los Angeles, Los Angeles, CA, USA

12.2: ***Invited Paper:*** **A Sheet-Type Wireless Electroencephalogram (EEG) Sensor System Using Flexible and Stretchable Electronics**
Tsuyoshi Sekitani, Osaka University, Ibaraki, Japan

12.3: **Smart Fabrics Functionalized by Liquid Crystals**
John West, Liquid Crystal Institute, Kent State University, Kent, OH, USA

12.4: **Composition Optimization of Transparent-Glass Fabric Reinforced Siloxane Hybrid (GFRHybrimer) Films for Thermally Stable Flexible-Display Substrate Film**
Young-Woo Lim, KAIST, Daejeon, South Korea

Session 13: Quantum-Dot LEDs II *(Emissive Displays)*

Tuesday, May 23, 2017 / 2:00 - 3:20 pm / Room 502B

Chair: *Ioannis Kymissis, Columbia University*

Co-Chair: *Poopathy Kathirgamanathan, Brunel University*

13.1: ***Invited Paper:*** **White Quantum-Dot LEDs with Improved Efficiency and Color Stability**
Changhee Lee, Seoul National University, Seoul, South Korea

13.2: **Reduction of Efficiency Roll-Off for Quantum-Dot LEDs by Using an Optimized Shell Layer**
Jin Jang, Kyung Hee University, Seoul, South Korea

13.3: **Top-Emitting Quantum-Dot LEDs with All the p-i-n Functional layers Deposited by Solution Processes**
Yibin Jiang, The Hong Kong University of Science and Technology, Kowloon, Hong Kong

13.4: ***Invited Paper:*** **Charge-Generation Junction for Quantum-Dot LEDs**
Jin Jang, Kyung Hee University, Seoul, South Korea

Session 14: Solution-Based TFTs *(Active-Matrix Devices)*

Tuesday, May 23, 2017 / 2:00 - 3:20 pm / Room 501

Chair: *Hsing-Hung Hsieh, Polyera Taiwan Corp.*

Co-Chair: *Junho Song, Samsung Display Co., Ltd.*

14.1: **Large-Area Processing of Solution-Type Metal Oxide in TFT Backplanes and Integration in Highly stable OLED Displays**
Marko Marinkovic, Evonik Resource Efficiency GmbH, Marl, Germany

14.2: **Towards Commercial Organic Electronics and Comprehensive Comparison of Device Performance and Reliability of Organic and a-Si:H TFT Technologies**
Kuan-Hsien Liu, AU Optronics Corp., Hsinchu, Taiwan, ROC

14.3: **High-Performance Organic-TFT Circuits Fabricated by All-Printing Technology on Flexible Plastic Substrates**
Yasuyoshi Mishima, Japan Advanced Printed Electronics Technology Research Association, Tsukuba, Japan

14.4: ***Late-News Paper:*** **Self-Pattern Process of InZnO Thin-Film Transistors without Photosensitive Additives**
Hyun Jae Kim, Yonsei University, Seoul, South Korea

Session 15: Materials and Devices for Display and Lighting *(Lighting / OLEDs)*

Tuesday, May 23, 2017 / 2:00 - 3:20 / Room 503

Chair: *Marina Kondakova, OLEDWorks*

Co-Chair: *Michael Weaver, Universal Display Corp,*

15.1: ***Invited Paper:*** **White OLEDs for Displays and Lighting**
Junji Kido, Yamagata University, Yonezawa, Japan

15.2: ***Invited Paper:*** **Status and Opportunities for Phosphorescent OLED Lighting**
Michael Hack, Universal Display Corp., Ewing, NJ, USA

15.3: ***Invited Paper:*** **Integrated Plastic Substrates for OLED Lighting**
Whitney Gaynor, Sinovia Technologies, Foster City, CA, USA

15.4: ***Invited Paper:*** **Transparent Ultra-Barrier Films for OLED Devices**
Ravi Prasad, Vitriflex, San Jose, CA, USA

Session 16: Advanced Driving Circuits II *(Display Electronics)*

Tuesday, May 23, 2017 / 2:00 - 3:20 pm / Room 518

Chair: *Taesung Kim, Samsung Electronics Co., Ltd.*

Co-Chair: *Richard McCartney, Pixel Scientific, Inc.*

16.1: **Low-Power Oxide-Semiconductor Display System**
Yoshiyuki Kurokawa, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

16.2: **Cost-Effective Driver-IC Architecture Using a Low-Power Memory Interface for Mobile-Display Application**
Moon-Sang Hwang, Samsung Display Co., Ltd., Gyeonggi-do, South Korea

16.3: **A Fast TFT Threshold-Voltage Sensing Method Based on Iterative Feedback**
Jianhang Fu, Shenzhen China Star Optoelectronics Technology Co., Ltd, Shenzhen, China

16.4: ***Invited Paper:*** **Acquiring Longer Lifetime for AMOLED Displays with Digital Aging Compensation**
Chihao Xu, Saarland University, Saarbruecken, Germany

Session 17: Flexible Substrates and Materials *(Display Materials and Processes / e-Paper and Flexible Displays)*
Tuesday, May 23, 2017 / 3:40 - 5:00 pm / Room 515A
Chair: *Ruiqing Ma, Universal Display Corp.*
Co-Chair: *Norihisa Kobayashi, Chiba University*

17.1: ***Invited Paper:*** **Foldable Touch AMOLED Display with a Plastic Window and Optical Enhancement**
Kuang-Jung Chen, ITRI, Hsinchu, Taiwan, ROC

17.2: ***Invited Paper:*** **Flexible Hard Coating for Foldable Display Cover Plastic Film**
Byeong-Soo Bae, KAIST, Daejeon, South Korea

17.3: **Towards Flexible Glass: Ultra-Thin Glass with Tight Dimensional Tolerance and High Strength Achieved by Ion Exchange**
Feng He, SCHOTT Glass Technologies (Suzhou) Co., Ltd., Suzhou, China

17.4: **Ultra-Thin Chemically Strengthened Cover Glass for Foldable Devices**
Shusaku Akiba, Asahi Glass Co., Ltd., Tokyo, Japan

Session 18: AR/VR *(Augmented Reality and Virtual Reality / Liquid-Crystal Technology / OLEDs)*
Tuesday, May 23, 2017 / 3:40 - 5:20 pm / Room 515B
Chair: *Akihiro Mochizuki, I-CORE Technology, LLC*
Co-Chair: *Michael Wittek, Merck KGaA*

18.1: ***Invited Paper:*** **Ultra-High-Brightness 2K x 2K Full-Color OLED Microdisplay Using Direct Patterning of OLED Emitters**
Amal Ghosh, eMagin Corp., Hopewell Junction, NY, USA

18.2: ***Invited Paper:*** **Liquid Crystal Lenses in Augmented Reality**
Yi-Hsin Lin, National Chiao Tung University, Hsinchu, Taiwan, ROC

18.3: ***Invited Paper:*** **A Switchable Light-Field Display for Mobile Applications**
David Fattal, LEIA, Inc., Menlo Park, CA, USA

18.4: ***Invited Paper:*** **Digital Modulation on a Microdisplay and Spatial Light Modulator**
Chen Wang, Jasperdisplay Corp., Hsinchu, Taiwan, ROC

18.5: **A 1058-ppi 4K Ultra-High-Resolution and high-aperture LCD with Transparent Pixels Using OS/OC Technology**
Susumu Kawashima, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 19: Micro-LED Displays *(Wearable Displays / Emissive Displays)*
Tuesday, May 23, 2017 / 3:40 - 5:20 pm / Room 502A
Chair: *Qun Yan, Fuzhou University*
Co-Chair: *Ioannis Kymissis, Columbia University*

19.1: ***Invited Paper:*** **Micro-LED Microdisplays by Integration of III-V LEDs with Silicon TFTs**
Vincent Lee, Lumiode, Inc., New York, NY, USA

19.2: ***Invited Paper:*** **Nitride Microdisplays and Micro-LED Displays**
Hongxing Jiang, Texas Tech University, Lubbock, TX, USA

19.3: ***Invited Paper:*** **Enabling Technology for Stretchable LED Displays and Electronic Systems**
Yongtaek Hong, Seoul National University, Seoul, South Korea

19.4: ***Invited Paper:*** **Emissive Displays with Transfer-Printed Microscale Inorganic LEDs**
Christopher Bower, X-Celeprint, Inc., Research Triangle Park, Raleigh, NC, USA

19.5: ***Invited Paper:*** **Low-Cost Micro-LED Displays for All Applications**
Reza Chaji, VueReal Inc., Waterloo, ON, Canada

19.6: ***Invited Paper:*** **A Novel Process for Fabricating High-Resolution and Very Small Pixel-pitch GaN LED Microdisplays**
Francois Templier, CEA-LETI and III-V Lab, Grenoble, France

Session 20: Perovskite Quantum-Dot Materials *(Display Materials and Processes / Emissive Displays)*
Tuesday, May 23, 2017 / 3:40 - 5:00 pm / Room 502B
Chair: *Poopathy Kathirgamanathan, Brunel University*
Co-Chair: *Ion Bita, Apple, Inc.*

20.1: ***Invited Paper:*** **Solution-Processable Luminescent Nanomaterials for Display, Lighting, and Beyond**
Yajie Dong, University of Central Florida, Orlando, FL, USA

20.2: **Mixed-Cation Perovskite LEDs with High Luminance and High Current Efficiency**
Bing Xu, Southern University of Science and Technology, Shenzhen, P. R. China

20.3: **A Greener Method to Synthesize Br-Rich Inorganic Cesium-Lead-Bromine Perovskite Nanocrystals for High-Brightness LEDs**
Peizhao Liu, China Star Optoelectronics Technology Co., Ltd., Wuhan, P. R. China

20.4: **High-Efficiency Perovskite QLED Achieving BT.2020 Green Chromaticity**
Tomoya Hirose, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 21: Reliability of Oxide TFTs *(Active-Matrix Devices)*
Tuesday, May 23, 2017 / 3:40 - 5:00 pm / Room 501
Chair: *Hyun Jae Kim, Yonsei University*
Co-Chair: *James Chang, Apple, Inc.*

21.1: **Development of a 55-in. 4K UHD OLED TV Employing an Internal Gate IC with High-Reliability and Short-Channel IGZO TFTs**
Ji Yong Noh, OLED TV Panel Group, LG Display Co., Gyeonggi-do, South Korea

21.2: **Highly Reliable Amorphous IGZTO TFTs with Back-Channel-Etch Structure**
Xin-Hong Lu, BOE Technology Group Co., Ltd, Beijing, P. R. China

21.3: **Reliability of Coplanar Oxide TFTs: Analysis and Improvement**
Ju-Heyuck Baeck-Ju, LG Display Co., Ltd., Gyeonggi-do, South Korea

21.4: ***Distinguished Paper:*** **Experimental Decomposition of Positive-Bias-Temperature Stress-Induced Instability in Self-Aligned Coplanar InGaZnO TFTs and Its Modeling Based on Multiple Stretched-Exponential Functions**
Dae Hwan Kim, Kookmin University, Seoul, South Korea

Session 22: Impact of Lighting *(Lighting)*
Tuesday, May 23, 2017 / 3:40 - 5:00 pm / Room 503
Chair: *Marina Kondakova, OLEDWorks*
Co-Chair: *Mike Lu, Acuity Brands Lighting*

22.1: ***Invited Paper:*** **Biological Effects of Light: Can Self-luminous Displays Play a Role?**
Mariana Figueiro, Rensselaer Polytechnic Institute, Troy, NY, USA

22.2: ***Invited Paper:*** **Adaptive Lighting for Energy-Efficient Comfort and Well Being**
Konstantinos Papamichael, University of California at Davis, Davis, CA, USA

22.3: ***Invited Paper:*** **Color-Quality Evaluation Methods for (Tunable) White-Light Sources**
Kees Teunissen, Philips Lighting Research Europe, Eindhoven, The Netherlands

Session 23: HDR and Image Processing *(Display Electronics)*
Tuesday, May 23, 2017 / 3:40 - 5:00 pm / Room 518
Chair: *Wei Yao, Apple, Inc.*
Co-Chair: *Ya Hsiang Tai, National Chuao Tung University*

23.1: **HDR Imaging by Generating Multi-Exposures from a Single Image for HDR/LDR Displays**
Jae Sung Park, INMC, Seoul National University, Seoul, South Korea

23.2: **An Adaptive Image Contrast Enhancement Using a Multi-Scale Histogram Representation**
Yufeng Jin, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, China

23.3: **A Histogram-Based Method for Dynamic-Range Expansion**
Yan Han, BOE Technology Group Co., Ltd., Beijing, P. R. China

23.4: ***Invited Paper:*** **Depth from Asymmetric Defocus Using Color-Filtered Aperture**
Yusuke Moriuchi, Toshiba Corp., Kawasaki, Japan

Session 24: Flexible/Foldable AMOLED Displays I *(e-Paper and Flexible Displays)*
Wednesday, May 24, 2017 / 9:00 - 10:20 / Room 515A
Chair: *Simon Kang, Apple, Inc.*
Co-Chair: *Kevin Gahagan, Corning Incorporated*

24.1: ***Invited Paper:*** **Flexible OLED Display Using C-Axis-Aligned-Crystal/Cloud-Aligned Composite Oxide Semiconductor Technology and Laser-Separation Technology**
Junichi Koezuka, Semiconductor Energy Laboratory Co., Ltd., Tochigi, Japan

24.2: ***Distinguished Paper:*** **Achieving a Foldable and Durable OLED Display with BT.2020 Color Space Using an Innovative Color-Filter Structure**
Meng-Ting Lee, AU Optronics Corp., Hsinchu, Taiwan, ROC

24.3: **An 8.34-in. 1058-ppi 8K x 4K Flexible OLED Display**
Tomoya Aoyama, Semiconductor Energy Laboratory Co., Ltd, Kanagawa, Japan

24.4: **High-Performance Flexible AMOLED Display Based on Metal-Oxide TFTs**
Lei Wang, South China University of Technology, Guangzhou, P. R. China

Session 25: Quantum-Dot and Micro-LED Displays *(Emissive Displays)*
Wednesday, May 24, 2017 / 9:00 - 10:20 am / Room 515B
Chair: *Tomokazu Shiga, The University of Electro-Communications*
Co-Chair: *John Van Derlofske, 3M*

25.1: ***Invited Paper:*** **Improvement of Viewing Angle and Color Gamut of TN-LCDs Using Ink-Jet-Printed Quantum-Rod Color Pixel Converter**
Masaki Hasegawa, Merck Performance Materials, Kanagawa, Japan

25.2: **Wide-Color-Gamut Display Based on Ultrastable Perovskite: Polymer Films and Red QDs/Phosphors**
Juan He, University of Central Florida, Orlando, FL, USA

25.3: **WITHDRAWN**

25.4: **Investigation and improvement of 10-µm Pixel-Pitch GaN-Based Micro-LED Arrays with Very High Brightness**
François Oliver, CEA-LETI, Minatec Campus and III-V Lab, Grenoble, France

25.5: ***Distinguished Student Paper:*** **Fully Integrated Active-Matrix Programmable UV and Blue Micro-LED Display System-on-Panel (SoP)**
Ke Zhang, Sun Yat-Sen University, Guangzhou, P. R. China

Session 26: Future of Automotive Displays and HMI *(Automotive/Vehicle Displays)*
Wednesday, May 24, 2017 / 8:30 - 10:20 am / Room 502A
Chair: *Philippe Coni, THALES Avionics*
Co-Chair: *Panos Konstantopoulos, Jaguar Land Rover Ltd.*

26.1: ***Invited Paper:*** **Effects of Visual Motion and Viewing Conditions on Visually Induced Motion Sickness**
Hiroyasu Ujike, Human Informatics Research Institute, AIST, Tsukuba, Japan

26.2: ***Invited Paper:*** **Recent Advances in HMI for Automotive Aftermarket Applications**
Liu Ren, Bosch Research North America, Palo Alto, CA, USA

26.3: ***Invited Paper:*** **Increasing Automotive Safety and Comfort through Haptics, Auditory, and Visual Feedback**
Stephane Vanhelle, Valeo, Annemasse, France

26.4: ***Invited Paper:*** **Automotive HMI: Current-Use Cases and Future Needs**
David Barat, PSA Group, Vélizy-Villacoublay, France

Session 27: Fast-Switching LCDs I *(Liquid-Crystal Technology)*
Wednesday, May 24, 2017 / 9:00 - 10:20 am / Room 502B
Chair: *Takahiro Ishinabe, Tohoku University*
Co-Chair: *Michael Wand, LC Vision, LLC*

27.1: **Submillisecond-Response Nematic LC for Wearable Displays**
Haiwei Chen, University of Central Florida, Orlando, FL, USA

27.2: **Novel Photo-Polymer Stabilization of Nano-Phase-Separated LCs with Fast Response**
Toru Fujisawa, DIC Corp., Saitama, Japan

27.3: **2D Confinement of LCs with Virtual Walls for a Fast-Response LCD**
Tae-Hoon Yoon, Pusan National University, Busan, South Korea

Session 28: High-Resolution Active-Matrix Displays *(Active-Matrix Devices)*
Wednesday, May 24, 2017 / 9:00 - 10:20 am / Room 501
Chair: *Kenichi Takatori, NLT Technologies, Ltd.*
Co-Chair: *Johan Bergquist, Semiconductor Energy Laboratory Co. Ltd.*

28.1: ***Invited Paper:*** **Effect of the Channel-Defining Layer on Vertical Oxide TFTs in Ultra-High-Resolution Display**
Sang-Hee Park, KAIST, Daejeon, South Korea

28.2: ***Distinguished Paper:*** **Toward Submicron Oxide TFTs for Digital Holography**
Ji Hun Choi, ETRI, Daejeon, South Korea

28.3: ***Distinguished Paper:*** **New Pixel-Driving Circuit Using Self-Discharging Compensation Method for High-Resolution OLED Microdisplays on a Silicon Backplane**
Kei Kimura, Sony Corp., Kanagawa, Japan

28.4: ***Late-News Paper:*** **An Ultra High Density 1.96-inch UHD 2250-ppi Display**
Hyun Sup Lee, Samsung Display, Yongin-si, South Korea

Session 29: Aerial Displays *(Display Systems)*
Wednesday, May 24, 2017 / 9:00 - 10:20 am / Room 503
Chair: *Satoshi Ouchi, Hitachi, Ltd.*
Co-Chair: *Sergei Yakovenko, Apple, Inc.*

29.1: **An Aerial Display: Passing through a Floating Image Formed by Retro-Reflective Reimaging**
Hayato Kikuta, Mitsubishi Electric Corp., Kyoto, Japan

29.2: **An Aerial Autostereoscopic Display Using Time-Division Multiplexing Parallax Barrier**
Hayato Takahashi, University of Tsukuba, Tsukuba, Japan

29.3: **A Floating Image for a Ultra-High-Resolution Display Device Using Integral Photography Theory**
Lei Niu, Shanghai Tianma Microelectronics Co. Ltd., Shanghai, P. R. China

Session 30: Advaced Laser Processing *(Display Materials and Processes / Display Manufacturing)*
Wednesday, May 24, 2017 / 9:00 - 10:20 am / Room 518
Chair: *Chi Woo Kim, Seoul National University*
Co-Chair: *Ion Bita, Apple, Inc.*

30.1: ***Invited Paper:*** **A New Spot-Beam-Based Laser-Crystallization Method for Producing Advanced AMOLED Displays**
James Im, Columbia University, New York, NY, USA

30.2: **The Crystallization Monitor: Enabling Accurate Metrology of Excimer-Laser-Annealed Si Films**
Paul van der Wilt, Coherent LaserSystems GmbH & Co. KG, Goettingen, Germany

30.3: **Deciphering ELA via Transient Reflectance Analysis**
Vernon Wong, Columbia University, New York, NY, USA

30.4: **Characterization of Si Thin Films Doped by Wet-Chemical Laser Processing**
Akira Suwa, Kyushu University, Fukuoka, Japan

Session 31: Flexible/Foldable AMOLED Displays II *(e-Paper and Flexible Displays)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 515A
Chair: *Kyung Cheol Choi, KAIST*
Co-Chair: *Jennifer Lin, AU Optronics Corp.*

31.1: ***Invited Paper:*** **Novel Technologies for Flexible Displays and Electronics**
Chen-Chu Tsai, ITRI, Taiwan, ROC

31.2: **FTIR Analysis and Mechanical Simulation of TFE to Achieve Excellent Flexiblity of Encapsulation of AMOLED Displays**
Ji Yi Chiou, Innovation Institute of Industrial Technology, Fuzhou, P. R. China

31.3: **Gas-Barrier Adhesive Sheet as a Face-Sealing Encapsulation for Flexible OLEDs**
Kenta Nishijima, LINTEC Corp., Saitama, Japan

31.4: ***Late-News Paper:*** **Challenges and Progress of Small Bending Radius Foldable AMOLED Display Module Technology**
Li Lin, Kunshan New Flat Panel Display Technology Center Co., Ltd., Kunshan, P.R. China

Session 32: Quantum Dots on an LED Chip *(Emissive Displays)*
Wednesday, May 24, 2017 / 10:40 am - 12:00 pm / Room 515B
Chair: *John Van Derlofske, 3M*
Co-Chair: *Seth Coe-Sullivan, QD Vision, Inc.*

32.1: **On-Chip Quantum Dots for Wide-Color-Gamut Displays**
Juanita Kurtin, Pacific Light Technologies, Portland, OR, USA

32.2: ***Distinguished Student Paper:*** **Quantum-Dot/Siloxane Composite Film Exceptionally Stable against Heat and Moisture**
Hwea Yoon Kim, KAIST, Daejeon, South Korea

32.3: **Stability Enhancement of LED Based on Quantum Dots through Atomic Layer Deposition**

Rui Lu, Southern University of Science and Technology, Shenzhen, P. R. China

32.4: **In-Situ Polymerization of Polystyrene for the Synthesis of Quantum-Dot Composite Particles for Wide-Color-Gamut Displays**
Lei Yang, Southern University of Science and Technology, Shenzhen, P. R. China

Session 33: Automotive Curved Display and Testing Methodology *(Automotive/Vehicle Displays)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 502A
Chair: *Peter Knoll, University of Karlsruhe*
Co-Chair: *Karlheinz Blankenbach, Pforzheim University*

33.1: ***Invited Paper:*** **Metrological Challenges of Curved Displays**
Martin Wolf, Instrument Systems, München, Germany

33.2: **Development of Free-Form Curved IPS-LCDs Using Stress-Retardation Analysis for Automotive Applications**
Se-Hong Park, LG Display.Co., Ltd., Gyeonggi-do, South Korea

33.3: **Display-Panel Certification System for the Vehicle Industry**
Kjell Brunnstrom, Acreo Swedish ICT AB, Sweden

33.4: **The Impact of Mechanical Stresses on Light Leakage in Curved LCDs**
Raymond Greene, Corning Incorporated, Corning, NY, USA

Session 34: Fast-Switching LCDs II *(Liquid-Crystal Technology)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 502B
Chair: *Linghui Rao, Microsoft*
Co-Chair: *Philip Bos, Kent State University*

34.1: ***Invited Paper:*** **Can LCDs Outperform OLED Displays in Motion-Picture Response Time?**
Shin-Tson Wu, University of Central Florida, Orlando, FL, USA

34.2: ***Invited Paper:*** **Novel Four-Transistor Pixel Circuit Using Source-Follower Structure for Field-Sequential-Color Blue-Phase LCDs**
Norio Sugiura, AU Optronics Corp., Hsinchu, Taiwan, ROC

34.3: **New Blue-Phase Liquid-Crystal Optimized for Color-Sequential Displays**
Yuge Huang, University of Central Florida, Orlando, FL, USA

34.4: **Figure of Merit for Optimizing the Performance of Uniform Lying Helix Cholesteric Liquid Crystals**
Guanjun Tan, University of Central Florida, Orlando, FL, USA

Session 35: Novel Active-Matrix Techniques *(Active-Matrix Devices)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 501
Chair: *Kalluri Sarma, Honeywell, Inc.*
Co-Chair: *Mike Hack, Universal Display Corp.*

35.1: ***Invited Paper:*** **Carbon-Nanotube TFTs and Vertically Gated OLEDs**
Huaping Li, Atom Nanoelectronics, Inglewood, CA, USA

35.2: ***Invited Paper:*** **Field-Coupled TFTs for Emerging Non-Display Applications**
Kai Wang, Sun Yat-Sun University, Guangzhou, P. R. China

35.3: **High-Resolution and Low-Power-Consumption Hybrid Display**
Ryo Hatsumi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

35.4: ***Invited Paper:*** **Physics-Based Design Tools: Key to Organic and Oxide-Based TFT Technology Innovation**
Ahmed Nejim, Silvaco Europe, Ltd., Cambridgeshire, UK

Session 36: Projection: Solid-State Illumination *(Display Systems)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 503
Chair: *David Eccles, Rockwell Collins*
Co-Chair: *Fujio Okumura, NEC Corp.*

36.1: ***Invited Paper:*** **The Revolution in Solid-State Light Sources in Projection**
Matthew Brennesholtz, Brennesholtz Consulting, Pleasantville, NY, USA

36.2: ***Invited Paper:*** **Lasers, Lamps, or Phosphors: Choices for the Future of Digital Cinema**
Michael Perkins, Christie Digital Systems, Kitchener, Ontario, Canada

36.3: **Improvement of Light-Extraction Efficiency of a Laser-Phosphor Light Source**
Hiroki Morita, Sony Corp., Kanagawa, Japan

Session 37: OLED Material Thermal Evaporation *(Display Manufacturing)*
Wednesday, May 24, 2017 / 10:40 - 12:00 pm / Room 518
Chair: *Tian Xiao, CBRITE, Inc.*
Co-Chair: *Robert Visser, Applied Materials*

37.1: ***Invited Paper:*** **A 800-ppi FMM Processing System Using Femtosecond Laser**
Jong Kab Park, AP Systems Corp., Hwaseong, South Korea

37.2: **Plane Source Evaporation Techniques for Super-Ultra-High-Resolution Flexible AMOLED Displays**
Changhun Hwang, OLEDON, Seoul, South Korea

37.3: **Low Thermal Expansion and Fine-Pitch Metal Masks Fabricated via Invar Fe–Ni Alloy Electroforming for Large Fine-Pitch OLED Displays**
Tomio Nagayama, Kyoto Municipal Institute of Industrial Technology and Culture, Kyoto, Japan

37.4: **A Novel Magnet-Array Design for Solving Mask Deformation**
Jian Xu, Tianma Microelectronics Co., Ltd., Shanghai, P. R. China

Session 38: e-Paper and Reflective Displays *(e-Paper and Flexible Displays)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 515A
Chair: *Zheng Cui, Chinese Academy of Sciences*
Co-Chair: *Keisuke Hashimoto, E Ink Holdings*

38.1: ***Invited Paper:*** **Recent Progress in Flexible Video e-Paper Display Based on Electro-Fluidic Technology**
Guofu Zhou, South China Normal University, Guangzhou, P. R. China

38.2: **eWriter with Eraser Functionality**
Clinton Braganza, Kent Displays, Inc., Kent, OH, USA

38.3: **Research on Full-Color Flexible Electrophoretic e-Paper with Interfacial Engineering and Transferring Process**
Bo-Ru Yang, Sun Yat-Sen University, Guangzhou, P. R. China

38.4: **Solid-State Reflective Displays (SRD) Utilizing Ultra-Thin Phase-Change Materials**
Ben Broughton, Bodle Technologies, Ltd., Oxford, UK

Session 39: Quantum-Dot Materials *(Display Materials and Processes / Emissive Displays)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 515B
Chair: *Seth Coe-Sullivan, QD Vision, Inc.*

39.1: ***Invited Paper:*** **Thick-Shelled Quantum Dots for Display Applications**
Ray-Kuang Chiang, Far East University, Tainan, Taiwan, ROC

39.2: ***Invited Paper:*** **GE RadiantRed Technology & TriGain Phosphors (Mn4+ doped Fluorides) for Wide Color Gamut Displays & Lighting**
James Murphy, GE, Niskayuna, NY, USA

39.3: **Patternable Color-Conversion Films Based on Thick-Shell Quantum Dots**
Jiun-Yi Lien, National Tsing Hua University, Hsinchu, Taiwan, ROC

39.4: ***Invited Paper:*** **Innovation in Heavy-Metal-Free Quantum-Dot Display Technology**
Nigel Pickett, Nanoco Technologies, Ltd., Manchester, UK

Session 40: Automotive Materials *(Automotive/Vehicle Displays / Display Materials and Processes)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 502A
Chair: *Yan Li, Shanghai Jiao Tong University*
Co-Chair: *Philippe Coni, THALES Avionics*

40.1: ***Invited Paper:*** **High-Thermal-Stability OLEDs**
Noel Giebink, The Pennsylvania State University, University Park, PA, USA

40.2: **Characterization of Anti-Sparkle Film for Automotive Applications**
Paul Weindorf, Visteon Corp., Van Buren Twp., MI USA

40.3: **The Development of UV Curable Optically Clear Silicone Adhesives for Automotive Displays**
Ju Young Yook, Dow Corning, Chungcheongbuk-do, South Korea

40.4: **The Development of a Moth-Eye Anti-Reflective Surface for Sunlight-Readable Flexible Displays**
Guanjun Tan, University of Central Florida, Orlando, FL, USA

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

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 502B
Chair: *Hoi-Sing Kwok, Hong Kong University of Science & Technology*
Co-Chair: *Koichi Miyachi, JSR Corp.*

41.1: **Strong Effect of Azodye Layer Thickness on RM-Stabilized Photoalignment**
Philip Bos, Liquid Crystal Institute, Kent State University, Kent, OH, USA

41.2: **Phase Separation of Photoaligned Polyimide Blends for Robust Reliability**
Han Jin Ahn, LG Display Co., Ltd., Gyeonggi-do, South Korea

41.3: **Novel PI-Less Vertical-Alignment Technology Using Hydrogen Bonding of Non-Ionic Amphiphiles**
Jun Hyup Lee, Myongji University, Yongin, South Korea

41.4: **Microscale Pattern Polarized Emission from Semiconductor Nanorods by Photo-Induced Alignment Technology**
Wanlong Zhang, Hong Kong University of Science and Technology, Kowloon, Hong Kong

Session 42: New Applications of Oxide TFTs *(Active-Matrix Devices)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 501
Chair: *Norbert Fruehauf, University of Stuttgart*
Co-Chair: *Sang Hee Park, KAIST*

42.1: **Development of Cu BCE-Structure IGZO TFT for a High-ppi 31-in. 8K x 4K GOA LCD**
Shi-Min Ge, Shenzhen China Star Optoelectronics Technology Co., Ltd., Guangdong, P. R. China

42.2: **Low-Power-Consumption 8K LCD with an Oxide-Semiconductor/Oxide-Conductor Pixel (Transparent Pixel)**
Manabu Sato, Semiconductor Energy Laboratory Co., Ltd., Tochigi, Japan

42.3: ***Late-News Paper:*** **Development of a Hybrid Array Technology of Crystalline IGZO and LTPS TFTs**
Jia-Hong Ye, AU Optronics Corporation, Hsinchu, Taiwan, ROC

42.4: ***Late-News Paper:*** **Chemical Stability Improvement in IGZO Using Selective Laser Annealing System**
Tetsuya Goto, Tohoku University, Sendai, Japan

Session 43: Digital-Signage Optics *(Digital Signage / Display Systems)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 503
Chair: *K. Käläntär, Global Optical Solutions*
Co-Chair: *Masaru Suzuki, Rohm and Haas Electronic Materials*

43.1: ***Invited Paper:*** **Display Technology Trends in Digital Signage**
Samantha Phenix, Planar, Beaverton, OR, USA

43.2: **Development of a Zero-Bezel Display Utilizing a Waveguide Image-Transformation Element**
Sejin Lee, LG Display Co., Ltd., Gyeonggi-do, South Korea

43.3: **Pixel-Structure Evaluation Regarding See-Through Image Quality for Transparent Displays: A Study Based on Diffraction Calculation and Full-Reference Image-Quality Assessment**
Zong Qin, National Chiao Tung University, Hsinchu, Taiwan, ROC

43.4: **A Low-Cost Multitouch Spherical Display: Hardware and Software Design**
Thomas Crespel, Inria, Bordeaux, France

Session 44: Flexible and OLED Display Manufacturing *(Display Manufacturing)*

Wednesday, May 24, 2017 / 3:30 - 4:50 pm / Room 518

Chair: *Toshiaki Arai, JOLED, Inc.*

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

44.1: ***Invited Paper:*** **Photolithography as an Enabler of AMOLED Displays beyond 1000 ppi**
Pawel Malinowski, Leuven, Belgium

44.2: **Separation Process using Commercially Available Polyimide or Acrylic with Linear Laser**
Satoru Idojiri, Semiconductor Energy Laboratory Co., Ltd., Tochigi, Japan

44.3: **Novel COP Optical Film with Durability for Flexible Displays**
Kyosuke Inoue, Zeon Corp., Toyama, Japan

44.4: ***Late-News Paper:*** **Development of a Novel Dye-Type Polarizer for Organic Light-Emitting Diodes**
Norio Koma, Polatechno Co., Ltd., Joetsu, Japan

Session 45: OLED Materials I *(Display Materials and Processes / OLEDs)*

Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 515A

Chair: *Denis Kondakov, DuPont Displays*

Co-Chair: *Ion Bita, Apple, Inc.*

45.1: ***Invited Paper:*** **Advanced Molecular Design for Blue Thermally Activated Delayed Fluorescence (TADF) Emitters**
Chihaya Adachi, Kyushu University, Fukuoka, Japan

45.2: ***Invited Paper:*** **Highly Efficient Acridine-Based TADF Emitters**
Ken-Tsung Wong, National Taiwan University, Taipei, Taiwan, ROC

45.3: ***Invited Paper:*** **Recent Progress in Highly Efficient Blue TADF Emitter Materials for OLED Displays**
Thomas Baumann, Cynora GmbH, Bruchsal, Germany

45.4: **Approach for Attaining Short Exciton Lifetime in Thermally Activated Delayed Fluorescence Emitters**
Jang Hyuk Kwon, Kyung Hee University, Seoul, South Korea

Session 46: Novel Technology for AR and VR *(Display Systems / Augmented Reality and Virtual Reality)*

Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 515B

Chair: *Achin Bhowmik, Intel Corp.*

Co-Chair: *Nikhil Balram, Google, Inc.*

46.1: **Dual-Layer High-Dynamic-Range Head-Mounted Display**
Hong Hua, The University of Arizona, Tucson, AZ, USA

46.2: ***Distinguished Paper:*** **Dynamic Real-World Objects in Augmented- and Virtual-Reality Applications**
Thomas Ebner, Fraunhofer Heinrich Hertz Institute, Berlin, Germany

46.3: **High-Contrast-Ratio Electrochromic Light-Shutter Device for Optical See-Through-Type Head-Mounted Display**
Jang Hyuk Kwon, Kyung Hee University, Seoul, South Korea

46.4: ***Distinguished Student Paper:*** **Perspective Correct Occlusion-Capable Augmented-Reality Displays Using Cloaking Optics Constraints**
Quinn Smithwick, Disney Research, Glendale, CA, USA

Session 47: Automotive Lighting and Systems *(Automotive/Vehicle Displays)*

Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 502A

Chair: *Karlheinz Blankenbach, Pforzheim University*

Co-Chair: *Liu Ren, Robert Bosch Research*

47.1: ***Invited Paper:*** **Automotive Interior Design, Information Technologies, and Ambient Lighting**
Robert Isele, BMW, Fürstenfeldbruck, Germany

47.2: ***Invited Paper:*** **The impact of Flexible OLED on Design and User Experience**
Takatoshi Tsujimura, Konica Minolta, Inc., Tokyo, Japan

47.3: ***Distinguished Student Paper:*** **Development of Active-Matrix LCD for Use in High-Resolution Adaptive Headlights**
Christiane Reinert-Weiss, University of Stuttgart, Stuttgart, Germany

47.4: ***Invited Paper:*** **Development of a Fast-Response Low-Latency Real-Time Camera and Display System for Automotive Application**
Kazunori Yamaguchi, Japan Display Inc., Ebina, Japan

Session 83: Alignment II *(Liquid-Crystal Technology)*

Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 502B

Chair: *Koichi Miyachi, JSR Corp.*

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

83.1: ***Late-News Paper:*** **Electro-optic Characteristic of OZ-IPS LCD Utilized an Application Type Zero Anchoring Material**
Osamu Sato, LG Display Co., Ltd., Tokyo, Japan

83.2: ***Late-News Paper:*** **Investigation of Transmittance Dependence Upon Pre-Tilt Angle in Ultra-Violet Induced Vertical Alignment**
Yuichiro Yamada, Rolic Technologies Ltd., Allschwil, Switzerland

83.3: ***Late-News Paper:*** **A Novel High Reactive and High Reliable Monomer for Polymer-Sustained-Alignment Liquid Crystal Displays**
Yuichi Inoue, DIC Corporation, Saitama, Japan

Session 48: Topics in Display Measurement *(Display Measurement)*
Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 503
Chair: *Michael Becker, Display-Messtechnik&Systeme*
Co-Chair: *Thomas Fiske, Microsoft*

48.1: ***Invited Paper:*** **Spectral Sensing with Computed Tomography Imaging Spectrometry**
Ralf Habel, Disney Animation, Toluca Lake, CA, USA

48.2: **WITHDRAWN**

48.3: **Relationship between Directional and Hemispherical-Diffuse Spectral Reflectance of Electrophoretic e-Paper Displays**
Dirk Hertel, E Ink Corp., Billerica, MA, USA

48.4: **Selective Scattering of PDLC and Its Application in OLED Displays**
Deng-Ke Yang, Liquid Crystal Institute, Kent State University, Kent, OH, USA

Session 49: In-Cell Touch *(Touch and Interactive Displays)*
Thursday, May 25, 2017 / 9:00 - 10:20 am / Room 518
Chair: *John Zhong, Apple, Inc.*
Co-Chair: *Willem Den Boer, Guardian Industries*

49.1: **A Novel Pixel-Structure Design with High Transmittance**
Xiaona Liu, Beijing BOE Display Technology Co., BeiJing, China

49.2: **Design of a-Si:H Bidirectional Gate-Driver Circuit Using Time-Division Driving Method for In-Cell-Touch AMLCDs**
Chih-Lung Lin, National Cheng Kung University, Tainan, Taiwan, ROC

49.3: **In-Cell Active Touch Circuit Using a-Si TFTs for a Large-Sized Panel**
Cheu Jia, National Chiao Tung University, Hsinchu, Taiwan, ROC

Session 50: OLED Materials II *(OLEDs)*
Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 515A
Chair: *Michael Weaver, Universal Display Corp.*
Co-Chair: *Chihaya Adachi, Kyushu University*

50.1: ***Invited Paper:*** **Recent Advances in Measuring and Understanding the Influence of Molecular Alignment on the Light-Extraction Efficiency of OLEDs**
Malte Gather, University of St. Andrews, St. Andrews, UK

50.2: ***Invited Paper:*** **Highly Efficient Phosphorescent OLEDs Using Exciplex Forming Hosts**
Jang-Joo Kim, Seoul National University, Seoul, South Korea

50.3: ***Invited Paper:*** **Blue-Emitting Square Planar Metal Complexes for Displays and Lighting Applications**
Jian Li, Arizona State University, Tempe, AZ, USA

50.4: **High-Performance Pyrimidine-Based TADF Emitters Realizing Pure-Blue—to--Green Emission with an EQE of 25%**
Hisahiro Sasabe, Yamagata University, Yamagata, Japan

Session 51: Emerging Applications: AR/VR *(Augmented Reality and Virtual Reality / Emerging Applications)*
Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 515B
Chair: *William Cummings, Microsoft*
Co-Chair: *Rasjesh Dighde, Microsoft*

51.1: ***Invited Paper:*** **True 3D Realization of a See-Through Head-Mounted Display with Complex Amplitude Modulation**
Qiankun Gao, Beijing Institute of Technology, Beijing, P. R. China

51.2: **A Multi-Image-Plane Display Based on Polymer-Stabilized Cholesteric Texture**
Yun-Han Lee, University of Central Florida, Orlando, FL, USA

51.3: **A Multi-Plane Optical See-Through Head-Mounted Display with Reverse-Mode PSLC**
Shuxin Liu, Shanghai Jiao Tong University, Shanghai, P. R. China

51.4: **Near-to-Eye Display for Vision Correction with Large FOV**
Yishi Wu, Shanghai Jiao Tong University, Shanghai, P. R. China

51.5: **Light Guide with Stair Micromirror Structure for Augmented-Reality Glasses**
Jaeyeol Ryu, Samsung R&D Institute Russia, Moscow, Russian Federation

Session 52: Automotive Visual Performance *(Automotive/Vehicle Displays)*
Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 502A
Chair: *Panos Konstantopoulos, Jaguar Land Rover, Ltd.*
Co-Chair: *Rambo Jacoby, Nvidia*

52.1: ***Invited Paper:*** **Driving Forces: How the Mobility of Tomorrow Influences Technologies of Today**
Nadine Langguth, Merck KGaA, Darmstadt, Germany

52.2: ***Invited Paper:*** **Quantum-Dot-Based Wide-Color-Gamut TFT-LCDs for Automotive Applications**
Rashmi Rao, West Bloomfield, MI, USA

52.3: **Anti-Reflective and Anti-Glare Surface Treatment on Cover Glass for Auto-Interior Applications**
Antoine Lesuffleur, Corning Incorporated, Painted Post, NY, USA

52.4: **Long-Lived Thermally Stable Blue OLED Achieving BT.2020 Color Gamut**
Naoaki Hashimoto, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Session 53: LCD Materials *(Liquid-Crystal Technology / Display Materials and Processes)*
Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 502B
Chair: *Matthew Sousa, 3M*
Co-Chair: *Yukito Saitoh, FUJIFILM Corp.*

53.1: ***Invited Paper:*** **Coatable Optical Films for Advanced Displays**
Eduardo Beltran-Gracia, Merck Chemicals, Ltd., Southampton, UK

53.2: ***Invited Paper:*** **Flexible LCDs Enabled by OTFTs**
Matthew Harding, FlexEnable, Cambridge, UK

53.3: ***Invited Paper:*** **Negative Dispersion Compensation Film Using Self-Organization of Smectic Host and Guest Reactive Mesogen Molecules**
Ji-Hoon Lee, Chonbuk National University, Jeonju, South Korea

53.4: **An Analysis Method for Image Sticking in anLCD**
Yonghwan Shin, Samsung Display Co., Ltd., Gyeonggi-do, South Korea

Session 54: 3D - Holographic *(Display Systems)*

Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 501

Chair: *Brian Schowengerdt, University of Washington*

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

54.1: **Laser-Speckle Reduction Using Nanoparticle-Embedded Liquid Crystals**
Kai-Han Chang, Liquid Crystal Institute, Kent State University, Kent, OH, USA

54.2: ***Invited Paper:*** **Holographic Display and Its Applications**
Hong-Seok Lee, Samsung Advanced Institute of Technology, Samsung Electronics, Suwon, South Korea

54.3: **Lensless Holographic 3D Display Based on Fast-Calculated Computer-Generated Hologram**
Chenliang Chang, Nanjing Normal University, Nangjing, China

54.4: ***Invited Paper:*** **Projection-Type Holographic 3D Display**
Koki Wakunami, National Institute of Information and Communications Technology, Tokyo, Japan

Session 55: High-Dynamic-Range Display Measurement *(Display Measurement)*

Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 503

Chair: *Stephen Atwood, Azonix Corp.*

Co-Chair: *Marja Salmimaa, Nokia Technologies*

55.1: ***Invited Paper:*** **Prediction of Overall HDR Quality by Using Perceptually Transformed Display Measurements**
Anustup Choudhury, Dolby Laboratories, Sunnyvale, CA, USA

55.2: **On the Complexities of Metrology for HDR Displays**
Joe Miseli, JVM Research, San Bruno, CA, USA

55.3: ***Invited Paper:*** **Delivering Content for HDR Displays**
Harald Brendel, Arnold & Richter Cine Technik, Muenchen, Germany

Session 56: Integrated Fingerprint Sensing *(Touch and Interactive Displays)*

Thursday, May 25, 2017 / 10:40 am - 12:00 pm / Room 518

Chair: *Patrick Worfolk, Synaptics*

Co-Chair: *Martin Grunthaner, Apple, Inc.*

56.1: **Novel Cover Glass for Fingerprint Authentication**
Masao Ozeki, Asahi Glass Co., Ltd., Tokyo, Japan

56.2: **Optical Touch Screen Integrated with Fingerprint Recognition**
Zhicheng Ye, Shanghai Jiao Tong University, Shanghai, P. R. China

56.3: **A 500-dpi Transparent On-Glass Capacitive Fingerprint Sensor**
Hyunseok Hwang, Yonsei University, Seoul, South Korea

Session 57: OLED Materials III *(OLEDs)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 515A

Chair: *Sven Zimmermann, Novaled GmbH*

Co-Chair: *Chris Brown, Kateeva*

57.1: ***Invited Paper:*** **Ink-Jet Printed OLED Displays**
Edgar Boehm, Merck KGaA, Darmstadt, Germany

57.2: ***Invited Paper:*** **Latest Development of High-Performance OLED Material Suitable for Printing**
Takeshi Yamada, Sumitomo Chemical Co., Ltd., Tsukuba, Japan

57.3: ***Invited Paper:*** **Solution-Processed Electron-Transporting Layer and Interface Characterization in OLED Displays**
Yong-Jin Pu, Yamagata University, Yonezawa, Japan

57.4: **Demonstration of Efficient Green OLEDs with High Color Purity**
Taku Oono, NHK Science & Technology Research Laboratories, Tokyo, Japan

Session 58: Advantage of Near-to-Eye Displays *(Applied Vision / Augmented Reality and Virtual Reality)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 515B

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

Co-Chair: *Sakuichi Ohtsuka, Kagoshima University*

58.1: ***Invited Paper:*** **New Developments in Video Coding towards an Immersive Visual Experience**
Seishi Takamura, NTT Corp., Kanagawa, Japan

58.2: **Color-Appearances Comparison between Head-Mounted Displays and Monitors**
Youngshin Kwak, UNIST, Ulsan, South Korea

58.3: **Optical Simulation of a Light-Field Display for Correcting Farsighted Vision**
Sung-Min Jung, LG Display Co., Ltd., Gyeoggi-do, South Korea

58.4: **Enhancing Note Taking and Review Processes Using an Interactive Dual-Input and Dual-Display Interface**
Sakuichi Ohtsuka, Kagoshima University, Kagoshima, Japan

Session 59: Automotive HUD / HMD *(Automotive/Vehicle Displays / Display Systems / AR/VR)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 502A

Chair: *Rashmi Rao, Harman International*
Co-Chair: *Haruhiko Okumura, Toshiba Corp.*

59.1: ***Invited Paper:*** **Recent Advances in Head-Mounted Light-Field Displays**
Hong Hua, The University of Arizona, Tucson, AZ, USA

59.2: ***Distinguished Paper:*** **Development of a 3D HUD Using a Tunable Bandpass Filter for Wavelength Multiplexing**
Philippe Coni, THALES Avionics SAS, Merignac, France

59.3: **Using Liquid Crystal-on-Silicon (LCOS) for Automotive Head-Up Displays**
Liangyu Shi, Hong Kong University of Science and Technology, Kowloon, Hong Kong

59.4: **A Proposal for Automotive Multi-Depth Head Up Display Using MEMS Scanning Lasers**
Jung Hoon Seo, Hyundai MOBIS, Youngin, South Korea

59.5: ***Invited Paper:*** **The Holographic Future of Head Up Displays**
Brian Mullins, Daqri Holographics, Knowlhill, Milton Keynes, United Kingdom

Session 60: High-Dynamic-Range LCDs *(Liquid-Crystal Technology)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 502B
Chair: *Shintson Wu, University of Central Florida*
Co-Chair: *Ki Chul Shin, Samsung Display Co., Ltd.*

60.1: **High-Dynamic-Range LCDs with Pixel-Level Local Dimming**
Haiwei Chen, University of Central Florida, Orlando, FL, USA

60.2: **Improving LCD Contrast Ratio by Modifying Metal Layout Design**
Li Chen, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

60.3: **High-Contrast IPS Mode Using Dichroic-Dye Liquid Crystal**
Soo In Jo, LG Display Co., Ltd., Gyeonggi-do,, South Korea

Session 61: 3D - Light Field and Autostereoscopic Displays *(Display Systems)*

Thursday, May 25, 2017 / 1:30 PM - 2:50 PM / Room 501
Chair: *Shinichi Uehara, Asahi Glass Co., Ltd.*
Co-Chair: *Jae Hyeung Park, Inha University*

61.1: ***Invited Paper:*** **Light-Field-Display Architecture and the Challenge of Synthetic Light-Field Radiance Image Rendering**
Thomas Burnett, FoVI 3D, Austin, TX, USA

61.2: **Smooth-Motion-Parallax Glassless 3D Screen System Using Linear Blending of Viewing Zones and Spatially Imaged Iris Plane**
Motohiro Makiguchi, NTT Service Evolution Laboratories, Kanagawa, Japan

61.3: **Glasses-Free 2D/3D Switchable Display Using a Trapezoidal Light-Extraction (TLE) Film on the Light-Guide Plate**
Jin-Ho Lee, Samsung Advanced Institute of Technology (SAIT), Samsung Electronics, Suwon, South Korea

Session 62: Display Measurement Standards *(Display Measurement)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 503
Chair: *Thomas Fiske, Microsoft*
Co-Chair: *Stephen Atwood, Azonix Corp.*

62.1: ***Invited Paper:*** **Progress toward the ICDM2 Display Measurements Standard**
Joe Miseli, JVM Research, San Bruno, CA, USA

62.2: ***Invited Paper:*** **Measurement of Visual Resolution of Display Screens**
Michael Becker, Display-Messtechnik&Systeme, Rottenburg am Neckar, Germany

62.3: **Recent Achievements in IEC TC 110, Electronic Display Devices: Reflecting Fast-Moving Markets**
Kei Hyodo, Konica Minolta, Inc., Hachioji, Japan

62.4: ***Invited Paper:*** **Consideration of Display Metrology for HDR and WCG Standards Based on Real Content**
Yongmin Park, LG Display Co., Ltd., Gyeonggi-do, South Korea

Session 63: OLED Touch *(Touch and Interactive Displays)*

Thursday, May 25, 2017 / 1:30 - 2:50 pm / Room 518
Chair: *Deuk Su Lee, LG Display Co., Ltd.*
Co-Chair: *Steven Bathiche, Microsoft*

63.1: **A Stack of Bendable Touch Sensors with Silver Nanowire for Flexible AMOLED Display Panels**
Zhen Liu, BOE Technology Group Co., Ltd., Beijing, P. R. China

63.2: **A Novel Touch-Control Method with Partial Scanning for LC, OLED, and Hybrid Displays Using an Oxide Semiconductor**
Kei Takahashi, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

63.3: **Capacitive Touch Sensor Using a-IGZO TFTs for Flexible AMOLED Displays**
Jin Jang, Kyung Hee University, Seoul, South Korea

Session 64: OLED Applications *(OLEDs)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 515A
Chair: *Chris Brown, Kateeva*
Co-Chair: *Denis Kondakov, DuPont Displays*

64.1: **Modeling the Mechanical Performance of a Foldable Display Panel Bonded by Optically Clear Adhesives**
Fay Salmon, 3M Software, St Paul, MN, USA

64.2: **Ink-Jet-Printing of High-Index Zirconia Nanocomposite Materials**
Peter Guschl, Pixelligent Technologies, Baltimore, MD, USA

64.3: **Fracture Mechanisms for AMOLED Panels in Handheld Devices**
Alexander Chen, Corning Advanced Technology Center, Taipei, Taiwan, ROC

Session 65: AR/VR Display Measurement *(Display Measurement / Augmented Reality amd Virtual Reality)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 515B
Chair: *Udo Krueger, TechnoTeam*
Co-Chair: *Marja Salmimaa, Nokia Technologies*

65.1: ***Distinguished Paper:*** **Photometric and Colorimetric Measurements of Near-to-Eye Displays**
John Penczek, University of Colorado, Boulder, and NIST, Boulder, CO, USA

65.2: **Optical Attachment to Measure Both Eye-Box/FOV Characteristics for AR/VR Eyewear Displays**
Katsutoshi Tsurutani, Konica Minolta, Osaka, Japan

65.3: **Spectroradiometric Measurements of Near-to-Eye and Head-Up Displays**
Richard Austin, Gamma Scientific, San Diego, CA, USA

65.4: **Novel Methods for Measuring VR/AR Performance Factors for OLED Displays/LCDs**
Kimmo Jokinen, OptoFidelity Oy, Tampere, Finland

Session 66: Emerging Electronic Materials *(Display Materials and Processes)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 502A
Chair: *Ion Bita, Apple, Inc.*
Co-Chair: *Andriy Romanyuk, Glas Troesch AG*

66.1: ***Invited Paper:*** **High-Mobility Flexible 2D Multilayer MoS_2 TFTs on Solution-Based Polyimide Substrates**
Sunkook Kim, Kyung Hee University, Gyeonggi-do, South Korea

66.2: **Printed Carbon-Nanotube TFTs and Their Application in OLED Backplane Circuits**
Jianwen Zhao, Suzhou Institute of Nanotech and Nano-Bionics, Chinese Academy of Sciences, Suzhou, P. R. China

66.3: **A High-Reliability PEDOT:PSS/Graphene Transparent Electrode for LCDs**
Tao Hu, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

66.4: ***Invited Paper:*** **High-Dielectric Capacitive Materials for High-Linearity Multi-Point Pressure-Sensing Touch Controls**
Johnson Hou, Uneo, Inc., New Taipei City, Taiwan, ROC

Session 67: Wide Color Gamut *(Liquid-Crystal Technology / Emissive Displays)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 502B
Chair: *Joun-Ho Lee, LG Display Co., Ltd.*
Co-Chair: *Shui Chih Lien, TCL Group*

67.1: ***Invited Paper:*** **Environmentally Friendly Quantum Dots for Display Applications**
Hyosook Jang, SAIT, Samsung Electronics, Suwon, South Korea

67.2: ***Invited Paper:*** **Ambient Processing of Quantum-Dot Photoresist for Emissive Displays**
Charlie Hotz, Nanosys, Inc., Milpitas, CA, USA

67.3: **Wide-Viewing-Angle Band-Pass Reflective Polarizer for Wide-Color-Gamut LCDs**
Takahiro Ishinabe, Tohoku University, Sendai, Japan

67.4: **Wide-Color-Gamut LCDs with Vivid-Color LED Technology**
David Wyatt, PixelDisplay Inc., San Jose, CA, USA

Session 68: Emerging Applications *(Emerging Applications)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 501
Chair: *Gary Jones, Nanoquantum Corp.*
Co-Chair: *Susan Jones, Nulumina Corp.*

68.1: **A 3D Augmented-Reality Training System for Endoscopic Surgery**
Rong Wang, Institute of Automation, Chinese Academy of Sciences, Beijing, P. R. China

68.2: ***Distinguished Student Paper:*** **Quantum-Dot LEDs (QLEDs) for Photomedical Applications**
Hao Chen, University of Central Florida, Orlando, FL, USA

68.3: ***Late-News Paper:*** **Phosphors for Discrete Codes to Facilitate Recycling**
Paul Harris, Brunel University London, Uxbridge, United Kingdom

Session 69: Digital Signage: Visual Quality *(Digital Signage)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 503
Chair: *Gary Feather, NanoLumens*

69.1: ***Invited Paper:*** **Fine-Pitch Image Quality on LED Video Screens**
Jorge Perez Bravo, NanoLumens, Inc., Peachtree Corners, GA, USA

69.2: **Novel Approaches for Reducing Luminance Gap between Adjacent Modules in OLED Video-Wall System**
Bongseok Kang, LG Display Co., Ltd., Gyeonggi-do, South Korea

69.3: **New Multiplexing Method for Quasi-Static and Artifact-Free Color LED Matrix Displays**
Pierre Boher, ELDIM, Herouville, France

69.4: **Active Backplane Design for Digital Video Walls**
Douglas Dykaar, DifTek Lasers, Inc., Waterloo, Ontario, Canada

Session 70: Touch Materials *(Touch and Interactive Displays / Display Materials and Processes)*

Thursday, May 25, 2017 / 3:10 - 4:30 pm / Room 518
Chair: *Bob Senior, Canatu, Ltd.*
Co-Chair: *Reiner Mauch, Schott AG*

70.1: **MOVED TO P.241**

70.2: **ZnO Nanorod Array Fabricated on Conductive and Transparent Gallium-Doped ZnO Substrates for Sensing Applications in Displays**
Chaoyang Li, Kochi University of Technology, Kami, Japan

70.3: **Preparation and Characterization of Polymer-Alumina Hybrid Hard Coatings with High Hardness on Plastic Substrates**
Kwan Young Han, Dankook University, Chungnam-do, South Korea

70.4: ***Late-News Paper:*** **Large-Area Single-Layer Capacitive Touch Panel**
Willem den Boer, Guardian Industries Corporation, Carleton, MI USA

Session 71: OLED Displays I *(OLEDs)*
Friday, May 26, 2017 / 9:00 - 10:20 am / Room 515A
Chair: *Chang-Wook Han, LG Display Co., Ltd.*
Co-Chair: *J. J. Lih, AU Optronics Corp.*

71.1: ***Invited Paper:*** **The Challenges of Flexible OLED Display Development**
Shan-Chen Gao, BOE Technology Group Co., Ltd., Beijing, P. R. China

71.2: **New Technology for Improving the Blackness of OLED TVs**
Hyun-Jong Noh, LG Display Co., Ltd., Gyeonggi-do, South Korea

71.3: **Curved Kawara-Type Multidisplay Combined with an OLED Device for BT.2020 Color Gamut**
Daiki Nakamura, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

71.4: **Uniformity Study on High-Resolution OLED Display Fabricated by Ink-Jet-Printing Process**
Peng-Yu Chen, AU Optronics Corp., Hsinchu, Taiwan, ROC

Session 72: Light-Field Displays for AR and VR *(Display Systems / AR/VR)*
Friday, May 26, 2017 / 9:00 - 10:20 am / Room 515B
Chair: *Nikhil Balram, Google, Inc.*
Co-Chair: *Brian Schowengerdt, University of Washington*

72.1: ***Distinguished Student Paper:*** **An Integral-Imaging-Based Head-Mounted Light-Field Display Using a Tunable Lens and Aperture Array**
Hong Hua, The University of Arizona, Tucson, AZ, USA

72.2: **A High-Resolution Near-to-Eye Light-Field Display with Fast Reconstruction Speed**
Mali Liu, Zhejiang University, Hangzhou, P. R. China

72.3: **Design Investigation of Tunable Liquid-Crystal Lens for Virtual-Reality Displays**
Afsoon Jamali, Kent State University, Liquid Crystal Institute, Kent, OH, USA

72.4: **Switchable Lens Based on Cycloidal Diffractive Waveplate for AR and VR Applications**
Yun-Han Lee, University of Central Florida, Orlando, FL, USA

Session 73: New LCDs I *(Liquid-Crystal Technology)*
Friday, May 26, 2017 / 9:00 - 10:20 am / Room 502B
Chair: *Gang Xu, Huawei*
Co-Chair: *Jenn Jia Su, AU Optronics Corp.*

73.1: **A Liquid-Crystal Lenticular Lens with High Cell Gap for Naked-Eye 3D Displays**
Chun Ge Yuan, Shenzhen China Star Optoelectronics Technology Co.,Ltd., Shenzhen, P. R. China

73.2: ***Invited Paper:*** **Active Switching LCP-Based Microlens Arrays for 3D Display and Imaging Applications**
Hak-Rin Kim, Kyungpook National University, Daegu, South Korea

73.3: **A 3-msec Response-Time Full-Phase-Modulation 1080p LCoS SLM for Dynamic 3D Holographic Displays**
Jhou-Pu Yang, National Chiao Tung University, Hsinchu, Taiwan, ROC

73.4: ***Late-News Paper:*** **Wavelength-Independent Electrically Tunable Microlens Array with a Chiral Nematic Liquid Crystal**
Kai-Han Chang, Liquid Crystal Institute, Kent State University, Kent, OH, USA

Session 74: Digital Signage: Emerging Applications *(Digital Signage / Emerging Applications)*
Friday, May 26, 2017 / 9:00 - 10:20 / Room 501
Chair: *Adi Abileah, Adi - Displays Consulting LLC*
Co-Chair: *Gary Feather, NanoLumens*

74.1: ***Invited Paper:*** **Development of Advanced 1 mm x 1 mm LED SMD for Fine-Pitch LED Signage**
Jovani Torres, Cree, Gilroy, CA, USA

74.2: **Development of a Novel Reflective Display System with Multi-Primary Color for Digital Signage**
Tatsuya Yata, Japan Display, Inc., Kanagawa, Japan

74.3: **Development of New Error-Diffusion Dithering Method for Reflective Memory-In-Pixel (MIP) LCDs**
Tadafumi Ozaki, Japan Display Inc., Kanagawa, Japan

74.4: **Large-Pixel Reflective-Color Display for Outdoor Applications**
Zhong Ji, Hangzhou Yuanse Technologies, Ltd., Zhejiang, P. R. China

Session 75: Perception-Based Video Optimization *(Applied Vision)*
Friday, May 26, 2017 / 9:00 - 10:20 am / Room 503
Chair: *James Larimer, ImageMetrics LLC*
Co-Chair: *Youn Jin Kim, Huawei Technologies Co., Ltd.*

75.1: ***Invited Paper:*** **Perceptual Issues of Streaming Video**
Alan Bovik, The University of Texas at Austin, Austin, TX, USA

75.2: ***Invited Paper:*** **Large-Scale Subjective Evaluation of Display Stream Compression**
Robert Allison, York University, Toronto, Ontario, Canada

75.3: **Reducing Glare from Reflected Highlights in Mobile and Automotive Displays**
Gregory Ward, IRYStec, Inc., Berkeley, CA, USA

Session 76: Advanced Manufacturing and Metrology *(Display Manufacturing)*
Friday, May 26, 2017 / 9:00 - 10:20 am / Room 518
Chair: *Greg Gibson, nTact*
Co-Chair: *Joerg Winkler, Plansee SE*

76.1: ***Invited Paper:*** **Optimization of Applied Materials Pivot Array Coater for Metal-Oxide Semiconductor Layers**
John Busch, Applied Materials, Inc., Santa Clara, CA, USA

76.2: **Field-Effect Transistor with CAC\CAAC-OS Double-Layer Structure for Diversion of Gen 8–10.5 a-Si Production Lines**
Kenichi Okazaki, Semiconductor Energy Laboratory Co., Ltd., Tochigi, Japan

76.3: ***Distinguished Paper:*** **Viewing-Angle-Switching Device Based on an Array of Optical Micro-Rods Incorporated in Electrophoretic Material Systems**
Hiroshi Tanabe, NLT Technologies, Ltd., Kawasaki, Japan

76.4: ***Invited Paper:*** **Inline Electron-Beam-Review (EBR) Accelerates Yield Ramp-Up of Advanced Displays**
Xuena Zhang, Applied Materials, Santa Clara, CA, USA

Session 77: OLED Displays II *(OLEDs)*

Friday, May 26, 2017 / 10:40 am - 12:00 pm / Room 515A

Chair: *Tariq Ali, eMagin Corp.*

Co-Chair: *Yasunori Kijima, Huawei Technologies Co., Ltd.*

77.1: ***Invited Paper:*** **Ultra-Low Power OLED Microdisplay for Extended Battery Life in Near-to-Eye Displays**
Uwe Vogel, Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Dresden, Germany

77.2: ***Invited Paper:*** **Probing the Thermal Stability of OLEDs with Neutrons**
Paul Burn, The University of Queensland., Brisbane, Australia

77.3: **A High-Image-Quality OLED Display for Large-Sized and Premium TVs**
Hong-Jae Shin, LG Display Co., Ltd., Gyeonggi-do, South Korea

77.4: **A 2.78-in. 1058-ppi Ultra-High-Resolution OLED Hybrid Display Using Oxide-Semiconductor/Oxide-Conductor (OS/OC) Pixels (Transparent Pixel) Achieving a High Aperture Ratio**
Kohei Yokoyama, Semiconductor Energy Laboratory, Kanagawa, Japan

Session 78: Optimizing Image Quality for VR *(Display Systems / Augmented Reality amd Virtual Reality)*

Friday, May 26, 2017 / 10:40 am - 12:00 pm / Room 515B

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

Co-Chair: *Achin Bhowmik, Intel Corp.*

78.1: **The Study of Motion-Blur Behavior in the Strobe Backlight LCD for Virtual-Reality Applications**
Chang-Hung Li, AU Optronics Corp., Hsinchu, Taiwan, ROC

78.2: **The Optimum Display for Virtual Reality**
Jinwoo Kim, Samsung Display Co., Ltd., Gyeonggi-do, South Korea

78.3: **Reduction of Screen-Door Effect with Diffractive Film for Virtual-Reality and Augmented-Reality Displays**
Joseph Yang, 3M Co., St Paul, MN, USA

78.4: **Screen-Door-Effect Mitigation and Its Quantitative Evaluation in VR Displays**
Joung-Min Cho, Samsung Electronics Co., Ltd., Gyeonggi-do, South Korea

Session 79: New LCDs II *(Liquid-Crystal Technology)*

Friday, May 26, 2017 / 10:40 am - 12:00 pm / Room 502B

Chair: *Philip Chen, National Chiao Tung University*

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

79.1: ***Invited Paper:*** **New Liquid Crystals for Light-Guiding Application: From Automotive Headlights to Adaptive Indoor Lighting**
Owain Parri, Merck KGaA, Darmstadt, Germany

79.2: **A New Mirror LCD Technology**
Mengjie Wang, Beijing BOE Display Technology Co., Beijing, P. R. China

79.3: **WITHDRAWN**

79.4: ***Late-News Paper:*** **Highly Transparent LCD Using New Scattering-Type Liquid Crystal with Field Sequential Color Edge Light**
Kentaro Okuyama, Japan Display Inc., Ebina, Japan

Session 80: Emerging Technologies *(Emerging Applications)*

Friday, May 26, 2017 / 10:40 am - 12:20 pm / Room 501

Chair: *Ian Underwood, University of Edinburgh*

Co-Chair: *Adi Abileah, Adi - Displays Consulting LLC*

80.1: **When Is the Best Time to Switch Modes of Light-Adaptable Displays for Lower Power and Better Visibility?**
Seung-Woo Lee, Kyung Hee University, Seoul, South Korea

80.2: **Evaluation of Displays and HMI for the Internet of Things (IoT)**
Karlheinz Blankenbach, Pforzheim University, Pforzheim, Germany

80.3: **Design of Spatial Light Modulator on Glass Using Oxide TFTs with Lower Off-State Current**
Jae-Eun Pi, ETRI, Daejeon, South Korea

80.4: **Study on Flat Speaker Direct Driving of a Flat OLED Display: Using a Stereo Exciter Speaker**
Hyungwoo Park, Soongsil University, Seoul, South Korea

80.5: **WITHDRAWN**

Session 81: Visual Quality of HDR Displays *(Applied Vision)*

Friday, May 26, 2017 / 10:40 am - 12:00 pm / Room 503

Chair: *Jennifer Gille, Qualcomm*

Co-Chair: *David Hoffman, Samsung Display Co.*

81.1: **WITHDRAWN**

81.2: **Visual Quality of a Global-Dimming Backlight for a High-Contrast Liquid-Crystal Panel for High-Dynamic-Range Displays**
Wei Xiong, Samsung Display Co., San Jose, CA, USA

81.3: **Reproducing High-Dynamic-Range Contents Adaptively Based on Display Specifications**
Ruidong Zhu, University of Central Florida, Orlando, FL, USA

81.4: **Image-Quality Evaluation of HDR Displays**
Haisong Xu, Zhejiang University, Hangzhou, P. R. China

Session 82: Glass Substrates and Components *(Display Manufacturing)*
Friday, May 26, 2017 / 10:40 am - 12:00 pm / Room 518
Chair: *Bradley Bowden, Corning Incorporated*
Co-Chair: *Yukio Endo, Asahi Glass Co.,Ltd.*

82.1: ***Distinguished Paper:*** **Glass Substrates for Microdisplays**
Kazutaka Hayashi, Asahi Glass Co., Ltd., Yokohama, Japan

82.2: **Glass Substrate with TGV(Thru Glass Via) Manufacturing Technology for Display Electronics**
Satoru Kuramochi, Dai Nippon Printing Co., Ltd., Chiba, Japan

82.3: **3.9-mm Ultra-Slim Curved TV Having a Glass Light-Guide Plate**
Jian-Yu Chang, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

82.4: **Mechanics of Ultra-Slim TV Sets with a Glass Light-Guide Plate**
Steve Burdette, Corning Incorporated, Corning, NY, USA

Poster Session
Thursday, May 25 / 5:00 – 8 pm / Petree Hall

Active-Matrix Devices

P.1: **Fabrication of a Short-Channel Oxide TFT Utilizing the Resistance-Reduction Phenomenon in In-Ga-Sn-O**
Mitsuru Nakata, NHK Science & Technology Research Laboratories, Tokyo, Japan

P.2: **Self-Aligned InGaZnO TFT with NH_3 Plasma-Treated Source/Drain Regions**
Jiangbo Chen, BOE Technology Group Co., Ltd., Beijing, P. R. China

P.3: **Effect of Light-Shielding Metal on the Performance of a-IGZO TFTs with a Self-Aligned Top-Gate Structure**
Mian Zeng, China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

P.4: **TCAD Simulation of Hydrogen-Diffusion-Induced Bias-Temperature Instability in a-IGZO TFTs**
Sung-Won Kong, Silvaco, Inc., Santa Clara, CA, USA

P.5: **Reduction of Mura Defects by Controlling the Mechanism of Negative-Bias Thermal Illumination Stress of Amorphous-Oxide TFTs**
Xiaona *Xu, BOE Technology Group Co., Ltd., Beijing, China*

P.6: **The Effect of Buffer Layers on the Electrical Characteristics and Stability of Self-Aligned Top-Gate IGZO TFTs**
Yi-Da Ho, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.7: **A 65-in. 8K LCD and OLED Display Using Cloud-Aligned Composite Oxide-Semiconductor (CAC-OS) FETs**
Kazunori Watanabe, Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

P.8: **Photocurrent Characteristics of Amorphous MgInO TFTs**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

P.9: **Parylene/Al_2O_3 Double-Layer Passivated Amorphous-InGaZnO TFTs**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

P.10: **High-Density Plasma-Sputtered InZnSnO TFTs Fabricated by Back-Channel Etching on a Flexible Polyimide Substrate**
Sung Haeng Cho, ETRI, Daejeon, South Korea

P.11: **Effects of Calcium Doping on Zinc-Oxide TFTs**
Wen Yu, Peking University, Beijing, P. R. China

P.12: **Extraction of Sub-Gap Density of States for Deteriorated Oxide-Semiconductor TFTs**
Katsumi Abe, Silvaco Japan Co., Ltd., Kyoto, Japan

P.13: **Quantitative Analysis and Deconvolution of Subgap States in a-InGaZnO**
Keisuke Ide, Tokyo Institute of Technology, Yokohama, Japan

P.14: **Prevention of Indium Segregation in BCE-Type InGaZnO TFTs with Titanium Source/Drain**
Jong Hyun Seo, Seoul, South Korea

P.15: **Prediction Method for Device Instability in a-InGaZnO TFTs under Positive Gate Biases and Thermal Stresses Using TCAD Simulation**
Jin-Young Kim, Silvaco Korea Co., Ltd., Seoul, South Korea

P.16: **Implementation of TCAD Simulation of a-IGZO Corbino TFTs for AMOLED Applications**
Ji-Ung Han, Silvaco Korea Co., Ltd., Seoul, South Korea

P.17: **Mutual Interaction of Voltages between the Top Gate and Bottom Gate of a-IGZO TFTs**
Pengfei Gu, BOE Technology Group Co. Ltd., Beijing, China

P.18: **Nitrogen-Doped a-InGaZnO TFTs Capped with Molybdenum-Doped ZnO UV-Shield Layers**
Chengyuan Dong, Shanghai Jiao Tong University, Shanghai, P. R. China

P.19: **Suppression of Light-Induced Instability of BCE InGaZnO Transistors and Panel Flicker Improvement for a 32-in. 8K x 4K LCDs**
Long-Qiang Shi, Shenzhen China Star Optoelectronics Technology Co., Ltd., Guangdong, P. R. China

P.20: **Optimization of N_2O Plasma Treatment for High Performance and Stability of Self-Aligned Top-Gate a-IZO TFTs**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

P.21: **The Effect of Thermal Annealing Sequence on the Performance of Self-Aligned Top-Gate a-IGZO TFTs**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

P.22: **Spice Model for Detection of Dynamic Threshold-Voltage Shift During Failure Analysis of Oxide-TFT-Based AMD Gate Drivers**
Won-Seok Lee, Silvaco Korea Co., Ltd., Seoul, South Korea

P.23: **Effect of Buffer Layers on Performance and Reliability of Poly-Si TFTs Fabricated on Polyimide**
Chan-Jui Liu, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.24: **A Novel Method to Improve LTPS Devices on Flexible Substrates by Off-State Bias Stress**
Ting-Yu Hsu, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.25: **Analysis of Kink Effect in LTPS TFTs with LDD and Source-Contacted Bottom Shield Metal**
Ki Woo Kim, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.26: **Reducing the Tails in a Four-Mask Process of Gen-8.5 LCDs**
Xiao Di Liu, Shenzhen China Star Optoelectronics Technology Co., Shenzhen, P. R. China

P.27: **A Narrow-Bezel a-Si TFT-LCD with a Vertical Gate-Line-in-Pixel Structure**
Takafumi Hashiguchi, Mitsubishi Electric Corp., Kumamoto, Japan

P.28: **Robust Gate-Driver Design with ESL IGZO TFTs Using a Stacked Buffer Structure**
Congwei Liao, Peking University, Shenzhen, P. R. China

P.29: **Flexible Gate Driver for Bendable AMOLED Display with Homojunction Oxide TFTs**
Jin Jang, Kyung Hee University, Seoul, South Korea

P.30: **Novel V_{th} Compensating LTPS Pixel Circuit for AMOLED Displays**
Keiichi Sano, Fordley Hong Kong Ltd., Hong Kong

P.31: **New Pixel Circuit Using Constant Charging Current to Achieve High Driving Voltage for Blue-Phase LCDs**
Chih-Lung Lin, National Cheng Kung University, Tainan, Taiwan, ROC

P.32: **Light Shielding Layers Enabled Full Swing Multi-Layer MoS2 Inverters For the Application of Photodetectors**
Sung Hun Jin, Incheon National University, Incheon, South Korea

P.33: **High-Performance and Large-Area Metal Chalcogenide Semiconductors by Sol-Gel Method**
Sung-Min Kwon, Chung-Ang University, Seoul, South Korea

P.221: ***Late-News Poster:*** **Indium Gallium Zinc Oxide Based Phototransistor for Visible Light Detection by Stacking Solution Processed Defective Oxide Layer**
Hyun Jae Kim, Yonsei University, Seoul, South Korea

P.222: ***Late-News Poster:*** **Fabrication of Nitrocellulose Based Organic Material as a Gate Dielectric Layer for Oxide Thin-Film Transistor**
Hyun Jae Kim, Yonsei University, Seoul, South Korea

Applied Vision

P.34: **Compare and Model Multi-Level Stereoscopic 3D Visual Fatigue Based on EEG**
Danli Wang, Chinese Academy of Sciences, Beijing, P. R. China

P.35: **Evaluation of Perceived See-Through Level for Transparent OLED Displays**
Chang-Mo Yang, Inha University, South Korea

P.36: **Evaluation of the Fatigue of the Influence of Blue Light from an LCD, Low-Blue-Light LCD, and an OLED Display**
Yi Lin Chen, China Star Optoelectronics Technology Co., Ltd., Wuhan, P. R. China

P.37: **A Study on the Correlation between the Human Visual System and the Contrast Modulation in a UHD Display Resolution**
Bo-Sang Kim, Korea University, Seoul, South Korea

P.38: **Study on the Human Factors of UHD Viewing Experiences**
Yoonjung Kim, Ewha Color Design Research Institute, Seoul, South Korea

P.216: ***Late-News Poster:*** **Reproduction of Perceptual Reality in Standard-Dynamic-Range (SDR) Environments Using High-Dynamic-Range (HDR) Images Compressed by Global Tone Mapping**
Sakuichi Ohtsuka, Kagoshima University, Kagoshima, Japan

Automotive/Vehicular Displays

P.39: **Simulation of Anti-Glare Cover Glass Using Fourier Optics Consistent with Sparkle and Other Visual Performances**
Masanobu Isshiki, Asahi Glass Co. Ltd., Yokohama, Japan

P.40: **High-Performance Curved Free-Form Automotive Displays**
Qing Ma, BOE Technology Group Co., Ltd., Beijing, P. R. China

P.41: **Development of High-Luminance Curved Backlight Modules for Automotive Display Applications**
Xin Gai, BOE Technology Group Co., Ltd., Beijing, P. R. China

P.42: **Advances in UV-Curing Silicone Optical Bonding Resins Designed for High-Reliability Automotive and Curved-Display Applications**
Jason Rouse, Wacker Chemical Corp., Adrian, MI, USA

P.223: ***Late-News Poster:*** **New Head-Up Display System with Ultrahigh Transmittance Using LCs with Negative Dielectric Anisotropy and RGBW Design**
Liting Fang, Tianma Microelectronics Co., Ltd., Xiamen, China

Display Electronics

P.43: **New Active Multiplexer Driving for Large-Sized NMOS LTPS-TFT Display**
Peng-Bo Xi, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.44: **Driving Methods for High Charging and Discharging Ratio of Pixels in Ultra-High-Resolution LCDs**
BoGun Seo, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.45: **Gate Driver Circuit with Pre-Bootstrapping Using Organic TFTs**
Jin-Ho Kim, Sungkyunkwan University, Suwon, South Korea

P.46: **An Oxide-Semiconductor Technology-Based Display Controller Suitable for an OS Display Comprising a Non-Volatile Scan Register for Display-Parameter Setting**
Shintaro Harada, Semiconductor Energy Laboratory Co. Ltd., Kanagawa, Japan

P.47: **A Gate Driver Circuit with a-IGZO TFTs for an 8-in. QXGA TFT-LCD Panel**
Chun-Da Tu, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.48: **An Oxide-Semiconductor FET-Based Low-Power Level Shifter Combined with OS LSI Technology-Based Display-Controller COG for a Low-Power OS Display System**
Hiroki Inoue, Semiconductor Energy Laboratory Co. Ltd., Kanagawa, Japan

P.49: **New RGBW Mapping Algorithm for High-Image-Quality LCDs**
Biao Pan, Wuhan China Star Optoelectronics Technology Co., Ltd., Wuhan, P. R. China

P.50: **Development of Multilevel Memory Consisting of Oxide TFTs**
Seung-Woo Lee, Kyung Hee University, Seoul, South Korea

P.51: **Analysis of Flicker-Enhancement Results Using Polarity MUX**
Mincheul Kim, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.52: **A Fibonacci-Like Charge Pump and Its Current-Drive-Capacity Enhancement for Display-Driver ICs**
Dedong Ding, Peking University, Shenzhen, P. R. China

P.53: **A Novel Pixel Circuit Providing Expanded Input Voltage Range for OLEDoS Microdisplays**
Binjie Liu, Peking University, Shenzhen, P. R. China

P.54: **A High-Voltage Analog Adder Based on a Class-B Amplifier for the Source Driver of an AMOLED External Compensation Scheme**
Shengdong Zhang, Peking University, Shenzhen, China

P.236: **A Coupling of Crossing Lines between MIPI and Touch Signals**
Sang Kook Kim, Samsung Display Co., Ltd., Yongin, South Korea

P.237: ***Late-News Poster:*** **Single Package DC/DC Converter for Tablet OLED**

Yoon-Young Lee, Samsung Display Co., Ltd., Yongin, South Korea

Display Manufacturing

P.55: **Development of a High-Resolution Display with ES- and BCE-Type Oxide TFTs**
Bo-Liang Yeh, AU Optronics Corp., Taoyuan, Taiwan, ROC

P.56: **Novel 3-Mask TFT Technology with ITO Lift-Off Enhancement Process for First Worldwide 28-in. HVA AMLCD TV**
Hongyuan Xu, Shenzhen China Star Optoelectronics Technology Co., Shenzhen, P. R. China

P.57: **Back-Channel-Contamination-Induced a-Si TFT Deterioration During the Manufacturing Process**
Yuan Xiong, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

P.58: **Fabrication of Flexible Transparent Electrodes by Using Field-Assisted Nanowire Chaining**
Mahshid Sam, University of Victoria, Victoria, British Columbia, Canada

P.59: **Analysis of Ink-Jet-Printing Mura in the PI Film on TFT-LCDs**
Guojing Ma, Beijing BOE Display Technology Co., Ltd., Beijing, P. R. China

P.60: **The Use of a Black Sealant in a Narrow Bezel Design**
Ji-Won Lim, LG Display Co. Ltd., Gyeonggi-do, South Korea

P.61: **Development of a High-Sensitivity PAC Material to Improve Aligner Lens Mura**
Younsung Na, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.62: **Non-Destructive Patterning Process of Transparent Graphene Electrodes**
Kang Guo, Beijing BOE Technology Group Co., Beijing, P. R. China

P.63: **Lower Reflective TFT Materials and Technology Innovation**
Shoukun Wang, Beijing BOE Display Technology Co., Ltd., Beijing, P. R. China

P.64: **The Property Differences of Copper Thin Films Deposited by One-Step and Multi-Step DC Magnetron Sputtering Technique**
Hui Xia, Shenzhen China Star Optoelectronics Technology Co., Shenzhen, P. R. China

P.65: **Application of Large-Curvature LCDs and Glass-Fracture Analysis**
Jiaxin Li, Shenzhen China Optoelectronics Technology Co., Shenzhen, P. R. China

P.66: **Study on the Stress Deformation in the Border Zone of an LCD Panel**
Wei Zhang, BOE Hefei Xinsheng Optoelectronics Technology Co., Ltd., Hefei, P. R. China

P.67: **An Analytical Method of Small-Sized Module Waving Based on the Finite-Element Simulation**
Bingchuan Zhang, Wuhan China Star Optoelectronics Technology Co., Ltd., Wuhan, P. R. China

P.68: **Analysis and Solution of Horizontal Line Defect Occurring During Reliability Testing in a 55-in. UD TFT-LCD TV with a-Si Integrated Gate-Driver Technology**
Li Mei Zeng, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

P.69: **Leaked Light Field: A Design Method for Using Natural Materials as the Display Surface**
Kazuki Takazawa, University of Tsukuba, Tsukuba, Japan

P.70: **Single-Array Nozzle Source Method for Homogeneous Mixed Organic Thin Film and Low Shadow Mask in 6GH AMOLED Mass Production**
Sungmoon Kim, YAS Co., Ltd., Gyeonggi-do, South Korea

P.71: **Cost Analysis of a-Si and Organic-Semiconductor-Based TFT Backplanes for FPDs**
Charles Annis, IHS Markit, Kyoto, Japan

P.72: **Invar Fe-Ni Alloy Metallization by Electroless Plating for TFTs**
Takayo Yamamoto, Kyoto Municipal Institute of Industrial Technology and Culture, Kyoto, Japan

P.73: **A Novel Substrate Material for Low-Complexity Flexible Backplane Manufacturing.**
Adrian Avendano-Bolivar, ARES Materials, Inc., Dallas, TX, USA

P.74: **Optically Clear DLC for Protecting Electronic Displays**
Alexander Demtchouk, Intevac, Santa Clara, CA, USA

P.75: **Mechanical Reliability of Curved Display Panels**
Kazutaka Hayashi, Asahi Glass Co., Ltd., Yokohama, Japan

P.76: **Effect of a-IGZO Thickness Variation on Device Uniformity and Drain Current for Dual- and Singe-Gate Driving TFTs**
Mohammad Billah, Kyung Hee University, Seoul, South Korea

P.77: **A Novel and Highly Reliable XeF Excimer Laser and a KrF Excimer Laser Used for ELA that Reduces the Cost of FPD Equipment**
Kaname Imokawa, Gigaphoton, Inc., Tochigi, Japan

P.78: **Calibration of a-InGaZnO TFTs with Various Channel Lengths Using TCAD Simulation**
Nam-Kyun Tak, Silvaco Korea Co., Ltd., Seoul, South Korea

P.79: **Substrate Glass Evaluation for New PLAS TFT Technology**
Stephanie Sisk, Corning Incorporated, Harrodsburg, KY, USA

P.80: **A Study on the Metal Corrosion and Diffusion Phenomenon in Cu-Mo Dual-Layer Metal Wires for TFT-LCDs**
Yue Wu, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

P.81: **Influence of Photo-Spacer Ratio on Yellow Spots and Ripple on a 5.5-in. Halftone-Mask Panel**
Lindou Chen, China Star Optoelectronics Technology Co., Ltd., Wuhan, P. R. China

P.82: **Optimization of the Transmittance and Color Gamut of LCDs by Using Big Data Strategy**
Dongchuan Chen, BOE Technology Group Co., Ltd., Beijing, P. R. China

P.83: **Comparison of Characteristic Pattern Form Based on the Photo-Resist Binders**
Da Eun Kim, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.217: **Designing the Coil Assembly to Solve Mask Deformation**
Yaoyang Liu, Tianma Micro-Electronics Co., Ltd., Shanghai, China

P.224: ***Late-News Poster:*** **Inkjet Printing Hyperbranched Polymer**
Juanhong Wang, South China University of Technology, Guangzhou, China

P.225 ***Late-News Poster:*** **The Development of Emerging LCD with Black Photo Spacer Application**
Minggang Liu, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen , China

Display Measurement

P.84: **Spectrometer-Enhanced Imaging Colorimetry**
Michael Becker, Instrument Systems, München, Germany

P.85: **A New Method for Color Mura Quantification**
Mintak Lee, Samsung Display Co., Ltd., Gyeonggi-do, South Korea

P.86: **Pixel-Level Luminance Measurement and Correction of OLED Displays**
Bo Magluyan, Radiant Vision Systems, Redmond, WA, USA

P.87: **A Novel Method for Measuring Optical Performance of AR/VR Displays**
Tongsheng Mou, Zhejiang University, Hangzhou, P. R. China

P.88: **Numerical Simulation and Quantitative Evaluation for Motional Display Uniformity in a Directional Backlight Autostereoscopic Display**
Jiahui Wang, Sun Yat-Sen University, Guangzhou, P. R. China

P.89: **Analysis of Mura Related to the Aperture-Ratio Non-Uniformity Based on the Pixel Design**
Jaegeon You, BOE Technology Group Co., Ltd., Beijing, P. R. China

Display Systems

P.90: **Visibility Analysis of a Transparent Display Using Fourier Optics**
Chan-Ho Lee, LG Display Co., Ltd., Gyeonggi-do, South Korea

3D

P.91: **Speckle-Reduced Holographic Display Demonstrated by Complex Modulation Based on a Double-Phase Method**
Jun Xia, Southeast University, Nanjing, P. R. China

P.92: **A Holographic Display System with Suppressed Speckle Noise**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

P.93: **Optimization of Image Quality for the Scalable Laser-Projection Light-Field 3D Display**
Kyaw Kyaw Aung, National Taiwan University, Taipei, Taiwan, ROC

P.94: ***Distinguished Student Poster:*** **A 3D Lenticular Display Rendering Based on Light-Field Acquisition**
Renjing Pei, Institute of Automation, Chinese Academy of Sciences, Beijing, P. R. China

P.95: **A Full-Resolution 3D Display Technique for a Computer Screen Free from the Accommodation-Convergence Conflict**
Lilin Liu, Sun Yat-Sen University, Guangzhou, P. R. China

P.96: **An Autostereoscopic 3D Display Based on a Sparse Lenticular Lens Sheet**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

P.97: **Design Parameters and Viewing-Zone Analysis of 360° Cylindrical Autostereoscopic 3D Display with Novel View-Pixels Arrangement**
Jhih-Yong Lai, National Taiwan University, Taipei, Taiwan, ROC

P.98: **A Turnkey Solution to Automatic Calibration and Crosstalk Reduction for Mobile 3D Displays**
Ma Kui, Chinese Academy of Sciences, Beijing, P. R. China

P.99: **Occluded 3D Object Display Algorithm Using Fourier Spectrum in Integral Imaging**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

P.100: **An Approach to Two-Step 3D Warping with Background Filling for a Multi-View Autostereoscopic Display**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

P.101: **Method of Accelerated Elemental Image-Array Generation for Integral-Imaging Displays**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

AR/VR

P.102: **Optical Design for a See-Through Head-Mounted Display with High Visibility**
Tsung-Hsien Wu, National Chiao Tung University, Tainan, Taiwan, ROC

P.103: **Optimization of Field of View and Color Uniformity in a Holographic Waveguide Display**
Yuning Zhang, Southeast University, Nanjing, P. R. China

P.104: **Holographic See-Through AR Display with Zero-Order Eliminated**
Pengcheng Zhou, Shanghai Jiao Tong University, Shanghai, P. R. China

P.105: **Sensor-Based Latency Reduction Method for Virtual-Reality Head-Mounted Displays**
Min-Woo Seo, Sogang University, Seoul, South Korea

P.218: **An Approach to Reduce VR Sickness by Content-Based Field-of-View Processing**
Nupur Kala, Samsung Electronics Co., Ltd. Seoul, South Korea

P.219: ***Late-News Poster:*** **A Digitally Switchable Multi-Focal Lens Using Freeform Optics for Wearable Displays**
Hong Hua, The University of Arizona, Tucson, AZ, USA

P.220: ***Late-News Poster:*** **Demonstration of an Occlusion-Capable Optical See-Through Head-Mounted Display**
Hong Hua, The University of Arizona, Tucson, AZ, USA

P.226: ***Late-News Poster:*** **The Optical Design of Head-mounted Display System Based on Computer Generated Holography**
Chien-Yu Chen, National Taiwan University, Taipei, Taiwan, ROC

Backlight Systems

P.106: **Wide-Color-Gamut LCD with a Functional Reflective Polarizer**
Haiwei Chen, University of Central Florida, Orlando, FL, USA

P.107: **Evolution of Glass Light-Guide Plate and Its Peripheral Technologies for Large-Sized TV Applications**
Yusuke Arai, Asahi Glass Co., Ltd., Tokyo, Japan

P.108: **Contrast Enhancement Based on Advanced Local Dimming for High-Dynamic-Range LCDs**
Ooksang Yoo, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.109: **A Lens Array Design for Collimated LED Backlight in Helmet-Mounted Displays**
Qibin Feng, Hefei University of Technology, Hefei, P. R. China

Emerging Applications

P.110: **A Large-Area Optical Switch Based on Electrowetting**
Qiong-Hua Wang, Sichuan University, Chengdu, P. R. China

P.111: **Reflection Image Enhacement Using Alkylated Imidazolium Ionic Liquid**
Yena Oh, Hongik University, Seoul, South Korea

P.112: **Sound-Quality Improvement of Front Speaker of a Flat-Panel Display: Emotional and EEG Test of Exciter Speaker**
Hyungwoo Park, Soongsil University, Seoul, South Korea

P.113: **Processing Technology and Application of a Bar Display Based on TFT-LCDs**
Ken Hsiao, Shenzhen China Star Optoelectronics Technology Co., Ltd., Shenzhen, P. R. China

Emissive Displays

P.114: **Non-Doped White-Light-Emitting Electrochemical Cells Employing Plasmonic Notch Filters**

Hai-Ching Su, National Chiao-Tung University, Tainan, Taiwan, ROC

P.115: ***Distinguished Student Poster:*** **All-Solution-Processed White Quantum-Dot LEDs with Three-Unit Tandem Structure**
Shuming Chen, Southern University of Science and Technology, Shenzhen, P. R. China

P.116: **Phosphors for Discrete Codes to Facilitate Recycling**
Paul Harris, Brunel University London, Uxbridge, UK

P.117: **Inverted Quantum-Dot LEDs with MgZnO-Modified Electron-Transport Layer**
Shengdong Zhang, Peking University, Shenzhen, P. R. China

P.118: **A Polarized Emitting Wafer by Using Self-Assembling Quantum Rods in the Nano-Channels**
Wei Chen, Southern University of Science and Technology, Shenzhen, P. R. China

P.119: **Highly Compatible Quantum Dots by Ligand Modification and Fabrication of a Film with Quantum Dots**
Changmin Lee, Sungkyunkwan University, Gyeonggi-do, South Korea

P.120: **Efficient Vacuum-Free-Processed Green Quantum-Dot LEDs for Next-Generation Displays**
Shuming Chen, Southern University of Science and Technology, Shenzhen, P. R. China

P.121: **Submicrometer Phosphor Preparation for Next-Generation Displays and Optical Films**
George Fern, Brunel University London, Uxbridge, UK

P.122: **Red and Green Quantum-Dot LEDs Fabricated by Ink-Jet Printing**
Yang Liu, Fuzhou University, Fuzhou, P. R. China

P.238: ***Late-News Poster:*** **New Design of Organic-Inorganic Hybrid Materials for Wide Color Gamut Display**
Da Hyeon Go, HYOSUNG Corporation, Anyang, South Korea

P.239: ***Late-News Poster:*** **Quantum Dots for Display Applications, Thermal and Photostability Through Shell Design**
Igor Nakonechnyi, Ghent University, Gent, Belgium

P.240: ***Late-News Poster:*** **Inverted Hybrid Quantum-Dot LED with Blue Polymer as Both Hole Transporting Layer and Emission Layer**
Congbiao Jiang, South China University of Technology, Guangzhou, China

e-Paper and Flexible Displays

P.123: **Carrier Transport Mechanism and Application of Polymer-Type Organic TFTs**
Chia-Hung Tsai, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.124: **Bending-Shift-Free Plastic LCD**
Tai-Hsiang Huang, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.125: **WITHDRAWN**

P.126: **A New Coatable Circular Polarizer for Anti-Reflection Flexible AMOLED Displays**
Xinli Ma, BOE Technology Group Co., Ltd., Beijing, P. R. China

P.127: **Angle-Insensitive Flexible Color-Filter Electrodes**
Kyung Cheol Choi, KAIST, Daejeon, South Korea

P.128: **Stress-Absorbing LTPS TFT for Highly Flexible AMOLED Displays**
Tai-Jui Wang, ITRI, Hsinchu, Taiwan, ROC

P.129: **Zero-Stress Thin-Film Encapsulation Method for Increasing the Intrinsic Stability of Flexible OLEDs**
Kyung Cheol Choi, KAIST, Daejeon, South Korea

P.130: **A Proof-of-Concept Study for Optimizing Encapsulation Structure for Flexible Electronics Devices Based on a Novel Thin Gas-Barrier Film**
Satoshi Naganawa, LINTEC Corp., Saitama, Japan

P.131: **Simultaneous Compensation of Bending-Induced Retardation of Plastic Film for Flexible-Display Applications**
Ji-Hoon Lee, Chonbuk National University, Jeonju, South Korea

P.132: **WITHDRAWN**

P.133: **Optimization of Multilayer Inorganic/Organic Thin-Film Structure for Foldable Barrier Films**
Jeong-Ha Shin, KAIST, Deajeon, South Korea

P.134: **Flexible Transparent Electrode Film with a Continuous Ag Nanofiber Network Embedded Structure for Flexible OLEDs**
Juyoung Park, KAIST, Daejeon, South Korea

P.135: **Dickson Charge Pumps Made of IGZO TFTs on Foil Substrates**
Simon Schimpf, University of Stuttgart, Stuttgart, Germany

P.136: **A Large-Area Flexible eWriter for Whiteboard Replacement**
Erica Montbach, Kent Displays Inc., Kent, OH, USA

P.137: **High-Performance-Reliability LTPS-TFT Fabricated on a Polyimide Substrate for Advanced Flexible Mobile Applications**
Junehwan Kim, Samsung Display Co., Ltd., Gyeonggi-do, South Korea

P.138: **A New Active-Matrix-Like Driving Technology of Floating-Metal-Ball Actuator Display without Transistors**
Seung-Woo Lee, Kyung Hee University, Seoul, South Korea

P.139: **High-Optical-Contrast Reflective Display with Electrochromism**
Jang Hyuk Kwon, Kyung Hee University, Seoul, South Korea

P.140: **Lamination Technology for Flexible AMOLED Displays**
Tsi-Hsuan Hsu,AU Optronics Corp., Hsinchu, Taiwan, ROC

P.228: ***Late-News Poster:*** **Self-Aligned Planar Metal Double-Gate Cu-MIC Poly-Ge TFTs Fabricated at 300°C on a Glass Substrate**
Akito Hara, The Tohoku Gakuin University, Tagajo, Japan

P.229: ***Late-News Poster:*** **Flexible Barrier Layer to Prevent Silver Mesh Transparent Conductive Films from Electrochemical Nigration**
Zheng Cui, Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou, P. R. China

P.230: ***Late-News Poster:*** **Magnetic Threshold Control of Janus Particles for Color Twisting-ball Display**
Yusuke Komazaki, The University of Tokyo, Kashiwa City, Japan

P.231: ***Late-News Poster:*** **Study of Stress Loading Trend in Flexible-Material**
Chang Hao, AU Optronics Corp., Hsinchu, Taiwan, ROC

Lighting

P.141: **Phantom Array Effects of LED Lighting**
Lili Wang, Southeast University, Nanjing, P. R. China

P.142: **Influence of Illumination Level on Visual Fatigue and Lighting Preference for Different Age Groups in China**
Xuefei Zhong, Southeast University, Nanjing, P. R. China

P.215: **Definition and Design of a Good Light**
Jwo Jou, National Tsing Hua University Hsinchu Taiwan, ROC

Liquid-Crystal Technology

Fast-Switching LCDs

P.143: Fast-Switching Liquid-Crystal Mode Based on Polymer-Stabilized Cholesteric Uniform Lying Helix
Liang-Chy Chien, Liquid Crystal Institute, Kent State University, Kent, OH, USA

P.144: Submillisecond Switching of Polymer-Stabilized Liquid Crystals with Crossed Patterned Electrodes
Tae-Hoon Yoon, Pusan National University, Busan, South Korea

P.145: Submillisecond Gray-Scale Response Time of a Uniform Lying Helix Liquid Crystal
Fangwang Gou, University of Central Florida, Orando, FL, USA

P.146: An LCD with Submillisecond Motion-Picture Response Time
Fenglin Peng, University of Central Florida, Orlando, FL, USA

P.227: *Late-News Poster:* Topology-Enhanced Electro-Optical Performance of Reverse-Mode Polymer Stabilized Cholesteric Shutters for Volumetric 3D Devices
Vinay Joshi, Liquid Crystal Institute, Kent State University, Keny, OH, USA

FFS/IPS

P.147: Study on the Correlation of Flicker-Shift Phenomenon and Ion-Accumulation Mechanism in FFS-Mode LCD Panels
Kun-Tsai Huang, HannStar Display Corp., Tanian, Taiwan, ROC

P.148: Fast-Response VA-FFS Liquid-Crystal Mode Using a 3D Electrode Design
Wing-Kit Choi, National Taiwan University, Taipei, Taiwan, ROC

Flexoelectric Effect

P.149: Maximization of Transmittance and Minimization of Image Flickering Due to the Flexoelectric Effect in the Low-Frequency Driving Fringe-Field-Switching (FFS) Mode Using LCs with Negative Dielectric Anisotropy
Seung Hee Lee, Chonbuk National University, Jeonju, South Korea

P.150: Flexoelectric Effect in Fine-Patterned In-Plane-Switching Mode
Seung Hee Lee, Chonbuk National University, Jeonju, South Korea

P.151: Fast Flexoelectro-Optic Response of Bimesogen-Doped Polymer-Stabilized Cholesteric Liquid Crystals in Vertical Standing Helix Mode
Vinay Joshi, Liquid Crystal Institute, Kent State University, Kent, OH, USA

Liquid-Crystal Alignment

P.152: *Distinguished Student Poster:* Alignment of Liquid Crystals on Ion-Beam-Spurted Graphene-Oxide Thin Layers
Yang Liu, Yonsei University, Seoul, South Korea

P.153: Liquid-Crystal Microlenses in a Porous Media
Victor Belyaev, Moscow Region State University, Moscow, Russian Federation

P.154: Photoaligned Nano-Rod Brightness-Enhancement Films for Display Applications
Abhishek Srivastava, Hong Kong University of Sciece and Technology, Kowloon, Hong Kong

P.155: High-Performance Coatable Polarizer by Photoalignment
Pan Su, Hong Kong University of Science & Technology, Kowloon, Hong Kong

P.156: One-Step Stabilized Azo-Dye Photoalignment for Mass Production
Cuiling Meng, Hong Kong University of Science and Technology, Kowloon, Hong Kong

Liquid-Crystal Devices

P.157: Novel Deep-Blue-Light Phase-Only LCoS 1080p Panel for Maskless Holographic Etching Optical System
Philip Chen, National Chiao Tung University, Hsinchu, Taiwan, ROC

P.158: Experimental Testing of a Curved LC Modulator for a Locally Adaptive Light-Shield Filter in an Augmented-Reality Device
Vasily Ezhov, GPI RAS, Moscow, Russian Federation

P.159: Wide-Viewing-Angle Negative-Dispersion Retarder by Stacking a Positive-Birefringence Reactive Mesogen on a Stretched Negative-Birefringence Film
Ji-Hoon Lee, Chonbuk National University, Jeonju, South Korea

P.160: Optical Study of Biaxial Nematic Bent-Core Liquid Crystal for a Wide-Viewing-Angle LCD
Ji-Hoon Lee, Chonbuk National University, Jeonju, South Korea

P.161: Reverse OCB LCD
Deng-Ke Yang, Liquid Crystal Institute, Kent State University, Kent, OH, USA

P.162: WITHDRAWN

P.163: Color-Shift Comparison between Negative and Positive Liquid Crystal
Yuejun Tang, China Star Optoelectronics Technology Co.,Ltd., Wuhan, P. R. China

Novel Pixel Design

P.164: Novel Pixel Design of Multi-Domain Polymer-Sustained-Alignment LCD Technology with Improved Mura Performance
Kun-Cheng Tien, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.165: Using a 1-Domain Pixel Design to Improve the Transmittance Rate of UV2A
Yu Zhang, Shenzhen China Star Optoelectronics Technology Co., Ltd, Shenzhen, P.R. China

P.166: Single-TFT-Driving Blue-Phase LCD with Diamond-Shaped Electrodes
Haiwei Chen, University of Central Florida, Orlando, FL, USA

P.167: A High-Transmittance Blue-Phase LCD with Opposite Polar Electrodes
Qiong-Hua Wang, Sichuan University, Chengdu, China

OLEDs

P.168: A Method to Improve the Color Quality and Efficiency for WOLED Displays
Mengzhen Li, Beijing Visionox Technology Co., Ltd., Beijing, P. R. China

P.169: Solution-Processed OLEDs with a Polymeric Hole-Transport Layer Crosslinked by Surface-Initiated Oxidative Crosslinking
Sang kyu Jeon, Sungkyunkwan University, Suwon, South Korea

P.170: Reddish-Orange Phosphorescent OLEDs Incorporating a Novel Co-Host: A Synergistic Strategy to Design Highly Simplified PhOLEDs for Application
Ting Xu, Peking University, Shenzhen, P. R. China

P.171: Ultra-Low-Power AMOLED Display for Wearable Applications

Tsang-Hong Wang, AU Optronics Corp., Hsinchu, Taiwan, ROC

P.172: Solution-Processed Polymer and Small-Molecule Tandem OLED
Takayuki Chiba, Yamagata University, Yonezawa, Japan

P.173: A Novel Method for Evaluating Water Permeability in Sealants by Using Secondary Ion Mass Spectrometry
Tatsuru Nakamura, Toray Research Center, Inc., Shiga, Japan

P.174: A 16.1-Times Elongation of Operation Lifetime in a Blue TTA-OLED by Using New ETL and EML Materials
Stanley Chen, Nichem Fine Technology Co., Ltd., Taiwan, ROC

P.175: Direct Electron-Beam Micropatterning and Thermal Annealing of OLED Devices
Elisabeth Bodenstein, Fraunhofer FEP, Dresden, Germany

P.176: Degradation of Blue Phosphorescent and Fluorescent OLEDs with Thermal Stress
Song Eun Lee, Hongik University, Seoul, South Korea

P.177: Synthesis of Pyridazine Compounds as Host Materials for Phosphorescent OLEDs
Ji Gwang Yu, Sungkyunkwan University, Suwon, South Korea

P.178: A Novel Capacitance Compensating Method for Luminance Uniformity
Hui Zhu, Kunshan New Flat-Panel-Display Technology Center Co., Ltd., Kunshan, P. R. China

P.179: Enhanced Light-Extaction from OLEDs Using a Quasi-Periodic Nanostructure
Ju Sung Lee, Korea University, Seoul, South Korea

P.180: Synthesis of Host Material with High Triplet Energy for Blue Phosphorescent OLEDs
JuHui Yun, Sungkyunkwan University, Suwoni, South Korea

P.181: Highly Efficient OLED Panels Based on Coated Porous Polymer Film as the Light-Extraction Layer
Changhun Yun, Korea Institute of Industrial Technology, Gwangju, South Korea

P.182: Universal Host o-DiCbzBz for High-Efficiency Phosphorescence and Thermal Active Delayed Fluorescence Organic Light-Emitting Device
Tien-Lung Chiu, Yuan Ze University, Taoyuan, Taiwan, ROC

P.183: Study of Electrical Probing through Thin-Film Encapsulation of Al2O3 Films Deposited by Low-Temperature ALD onto Different Metallic Underlayers
Tony Maindron, CEA-LETI, Grenoble, France

P.184: Pulsed-Laser-Based Spot-Beam Crystallization of a-Si Films for AMOLED Displays
Akhilesh K. Suresh, Columbia University, New York, NY, USA

P.185: Study on the Viewing-Angle Characteristics by Color Layer with Cavity Effect
Jung Min Yoon, LG Display Co., Ltd., Gyeonggi-do, South Korea

P.186: Realization of a Low-Voltage Drop across the Charge-Generation Layer Using Bi-Layered Oxide Semiconductors for Tandem OLEDs
Hongsheng Yang, Tokyo Institute of Technology, Yokohama, Japan

P.187: Electronic Structures of Various Color Light-Emitting Amorphous-Oxide Semiconductor Thin Films
Naoto Watanabe, Tokyo Institute of Technology, Yokohama, Japan

P.188: WITHDRAWN

P.189: Impedance Analysis for Crosstalk Phenomena in AMOLED Panels
Toshiyuki Endo, Nissan Chemical Industries, Ltd., Chiba, Japan

P.190: White-Light Emission of Triple Core Chromophores Using Anthracene and Pyrene Moieties
Jongwook Park, Kyung Hee University, Suwon, South Korea

P.191: Realizing Deep-Blue TADF Emission with CIE Coordinates of (0.16, 0.15) Using a Highly Twisted Acceptor Unit
Hisahiro Sasabe, Yamagata University, Yamagata, Japan

P.192: Efficient Deep-Red Phosphorescent OLEDs with an EL Emission Peak of 670 nm
Hisahiro Sasabe, Yamagata University, Yamagata, Japan

P.193: Viewing-Angle Performance of Curved Color-by-White AMOLED Displays
Johan Bergquist, Semiconductor Energy Laboratory, Kanagawa, Japan

P.194: Control of the Viewing-Angle Dependence by Insertion of a Scattering Layer in Microcavity OLEDs
Cheol Hwee Park, Korea University, Seoul, South Korea

P.195: Equivalent Lifetime Method to Improve OLED Luminance Degradation
Xiaoning Zhang, Xi'an Jiaotong University, Xi'an, P. R. China

P.196: High-Efficiency Blue Phosphorescence OLED Device with Novel CbzBZ Host
Chi-Feng Lin, National United University, Taiwan, ROC

P.197: Enhanced Out-Coupling Efficiency of OLEDs Using Nano-Sized Pixel Defining Layer
Ha Hwang, Korea University, Seoul, South Korea

P.198: Optically Clear Adhesives Enabling Foldable and Flexible OLED Displays
Christopher Campbell, 3M Co., St. Paul, MN, USA

P.199: Novel Electron-Transporting Materials for Long-Lifetime Fluorescent Blue OLED Devices and Lighting Applications
Huang-Ming Guo, e-Ray Optoelectronics Technology Co., Ltd., Taoyuan, Taiwan, ROC

P.200: Characteristics of Thin-Film Passivation Processed by a Low-Temperature LAPECVD Process
Jung A Choi, Korea Institute of Industrial Technology, Gyeonggi-do, South Korea

P.201: Brightness Enhancement of a 3D Display through Patterning Linearly Polarized OLED
Jae-Hoon Kim, Hanyang University, Seoul, South Korea

P.202: A Flexible Transparent OLED Display with FlexUp Technology
Yu-Hsiang Tsai, ITRI, Hsinchu, Taiwan, ROC

P.214: Flexible White OLED via Solution Process
Jwo Jou, National Tsing Hua University, Hsinchu, Taiwan, ROC

P.232: *Late-News Poster:* Work Function Engineering of Graphene Anode by Solution-Processible MoOx-Doping for Efficient Polymer Light-Emitting Diodes
Dongchan Lee, Korea Advanced Institute of Science and Technology, Daejeon, South Korea

P.233: *Late-News Poster:* The Optimization with Inverted TEOLED Having a Noble Metal Electrode for Realizing Highly Efficient Flexible OLEDs
Min Chul Suh, Kyung Hee University, Seoul, South Korea

P.234: *Late-News Poster:* OLED Lighting with High Out-Coupling Efficiency and Reliability
Nobuhiro Nakamura, Tokyo Institute of Technology, Yokohama, Japan

P.235: *Late-News Poster:* Analysis of Using Scattering Particles to Eliminate Reflective Diffraction and Keep Image Sharpness for OLED Displays
Chi-Chieh Wu, National Chiao Tung University, Hsinchu, Taiwan, ROC

Touch and Interactivity

Capacitive Touch

P.203: Frequency-Multiplexed Projected-Capacitive Touch Screen
Rob McCulloch, A D Metro, Ottawa, Ontario, Canada

P.204: Parameters of the Driving Voltage of the Touch-Screen Panel Electrode Inspection Instrument Using Polymer-Dispersed Liquid Crystal
Ji-Hoon Lee, Chonbuk National University, Jeonju, South Korea

P.205: High-Sensitivity Touch-Sensor Technology for Foldable AMOLED Displays
Heng-Yin Chen, ITRI, Hsinchu, Taiwan, ROC

P.206: Force-Sensor-Embedded Advanced In-Cell Touch Panel for TFT-LCDs
Cheolse Kim, LG Display Co., Ltd., Gyeonggi-do, South Korea

Touch Materials

P.207: Research on the Improvement of the ESD Ability of OGS Based on DOE
Li Jun, Hefei XinSheng Opto-Electronic Technology Co., Ltd., Hefei, P. R. China

P.208: High-Surface-Strength Technology Applied to a Glass Solution for Touch Panels
Zeng Ting, Hefei BOE Technology Group Co., Ltd., Heifei, P. R. China

P.209: Augmenting Capacitive Touch with Piezoelectric Force Sensing
Shuo Gao, University of Cambridge, Cambridge, UK

P.210: Investigation on the Reliability of OGS Thermoplastic ACF
Xiao-Yue He, BOE Hefei XinSheng Opto-Electronic Technology Co., Ltd., Hefei, P. R. China

P.211: Mechanism Analysis of SiO_xN_y Peeling on the OGS Organic Film Process
Weijie Ma, BOE Technology Group Co., Ltd., Bejing, China

P.241: Study of Static-Electricity-Resistant Cell Materials for an In-Cell-Touch Structure
Tsun-Chih Huang, Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan, ROC

Touch Moiré

P.212: Simulation and Analysis of Moiré Effect on LCDs
Yimin Chen, Hefei BOE Optoelectronics Technology Co., Ltd., Hefei, P. R. China

P.213: Simulation of Color Moiré Pattern in LCD-Based Metal-Mesh Touch Screen
Jun Xu, Hefei BOE Technology Co., Ltd., Hefei, P. R. China