

# EXHIBITORS' FORUM PRESENTATION SCHEDULE TUESDAY, MAY 22

Session F1

Exhibitors' Forum

---

## OPTICAL FILMS, BONDING, AND LAMINATION

---

Tuesday, May 22 / 11:00 am – 1:00 pm / West Halls AB

**F1.1: Functional Film Solutions: Recent Trends in Next-Generation Displays (11:00)**

*Kao Chein-Yi*

*BenQ Materials Corp., Taoyuan, Taiwan*

*Booth 1057*

With the coming of technologies such as 8K/4K/IoT and foldable displays, BenQ, as a functional film maker, provides solutions for features such as high resolution, high durability, and flexibility.

**F1.2: High-Impact Absorbent Acrylic Foam and Silicone OCA Technology (11:15)**

*Kensuke Kato*

*Iwatani Corp. of America, Houston, TX, US*

*Booth 429*

Iwatani Corp. provides high-performance film and industrial tape products specialized for electronic devices. Its ISR-ACF acrylic foam series has high-impact absorbing performance, and its silicone optically clear adhesive (OCA) has high optical properties suitable for mobile devices. With innovative technologies and superb analysis, the company makes products that offer customers the possibility of different design concepts for freedom of development.

**F1.3: Functional Films for Display Applications (11:30)**

*Jappar Nizamidin*

*Kimoto Tech, Inc., Cedartown, GA, US*

*Booth 508*

Coated films are typically used in and on LCDs and OLED displays in smartphones, computers, and other applications/devices to reduce color shift and light leakage, and to optimize image quality and readability at high viewing angles as well as in various lighting conditions. Kimoto has developed light-diffusion, hard-coated, adhesive, and conductive films. Its technology improves light diffusion, offers screen protection, and enhances conductive and process film properties by supplementing them with the highest quality surface morphology, optical, and physical properties, as well as weather resistance. Kimoto offers a variety of proprietary coatings that can be applied to plastic substrates on one or both sides.

**F1.4: Flexible Film (11:45)**

*Kim Sang Kyun*

*Kolon Industries, Apex, NC, US*

*Booth 235*

Kolon's CPI is a flexible film with high transparency, superior mechanical properties, high heat resistance, and a super-smooth surface. This award-winning innovation is available in small samples, wide rolls, and varnishes. From small mobile devices to large displays, CPI represents the future of information display.

**F1.5: Optical Bonding Advancements (12:00)**

*Alex Giordano  
Precision Valve Automation, Cohoes, NY, US  
Booth 1537*

Optical bonding is quickly being adopted by the world's leading original equipment manufacturers (OEMs) and as such, the process is beginning to mature. There are advancements each year that provide new tools for makers of the best display technology. Advancements include hardware, software, and liquid optically clear adhesive (LOCA) varieties.

**F1.6: What You Need to Know for the Best Display Lamination (12:15)**

*Raymond C. Wiley  
Sun-Tec America, LLC, Scottsdale, AZ, US  
Booth 644*

This presentation will cover key topics such as lamination equipment and materials used that can create challenges and impact the quality of lamination processes. The presentation will also provide some useful tips and helpful hints to optimize lamination process development.

**F1.7: Transparent Optical Film (12:30)**

*Jim Weiwei  
Zeon Corp., Tokyo, Japan  
Booth 1139*

Zeon Corp. produces high-transparency, low-haze optical films and retarders based on Zeon's cyclo-olefin polymer (COP). Two new optical films, ZC film and ZE film, will be introduced at Display Week. These films deliver both high optical transparency and enhanced mechanical flexibility to enable advanced future flexible touch experiences and usability.

**F1.8: High-Performance Transparent Conductive Films (12:45)**

*Chan Chung Pui  
Flectrode Technology, Ltd., Hong Kong  
Booth 1051*

A new transparent-conductive film (TCF) technology has been developed by Flectrode. The film has outstanding properties of transparency, conductivity, and flexibility – with >90 percent transparency, sheet resistance of <0.3 ohm/sq, and rolling test of over hundred thousand times. Depending on the requirements, the conductive network can be built on different polymer substrates. Potential applications include flexible displays, photovoltaics, and ICs.

**LUNCH (1:00–2:00)**

---

**DISPLAY METROLOGY**

---

Tuesday, May 22 / 2:00 – 2:45 pm / West Halls AB

**F2.1: Fast and Lightweight Display Measurement System (2:00)***Robert Calpito**Gamma Scientific, San Diego, CA, US**Booth 405*

The Gamma Scientific GS-1160B spectroradiometer is a benchtop spectroradiometer/flicker meter that provides fast, accurate, and repeatable display measurements for display designers, manufacturers, and engineers, making it a powerfully productive tool in an affordable, lightweight package. The system is ideal for color and intensity measurement of LCDs, LEDs, OLEDs, and QD displays.

**F2.2: Breakthrough in Display Color Analysis and Flicker and Luminance Measurement (2:15)***Jay Catral**Konica Minolta Sensing Americas, Ramsey, NJ, US**Booth 1329*

Konica Minolta Sensing presents a breakthrough in display color analysis and flicker and luminance measurement. The company is introducing the latest in its series of display color analyzers, the CA-410, the first in this next generation of light measurement.

**F2.3: Measurement Equipment for Virtual Imaging Displays (2:30)***Tongsheng Mou**SENSING Optronics Co., Ltd., Chicago, IL, US**Booth 545*

SENSING offers the latest technology for the measurement of optical characteristics, geometric parameters, and image quality of virtual image displays, including luminance and chromaticity, FoV, eye box, angular resolution, MTF, image distance, image distortion, etc. A 5-mm aperture located at the front focal point of the imaging lens can keep the entrance pupil of the luminance meter matched with the exit aperture of a test AR/VR device, and the high-sensitivity spectroradiometer integrated with an imaging photometer with high angular resolution can rotate around this aperture center in V-H angular coordinates to simulate eye viewing with constant FoV at any imaging distance.

**BREAK (2:45–3:00)**

---

**TOUCH TECHNOLOGY**

---

Tuesday, May 22 / 3:00 – 3:45 pm / West Halls AB

**F3.1: Interactive Touch System for Multiple Users in Everyday Life (3:00)**

*Kay Tseng*  
*eGALAX\_eMPIA Technology, Inc., Taipei, Taiwan*  
*Booth 1145*

Touchscreens have become part of our daily lives, in rather personal ways. The company's new touch solution breaks the boundaries and bridges the gaps between users.

**F3.2: Metal-Mesh vs. ITO in Projected-Capacitive Touchscreens: Performance Comparison Through Measurements and Simulations (3:15)**

*Athanasios Karafyllas*  
*Fieldscale, Thessaloniki, Greece*  
*Booth 1529*

In this study, the performance of ITO and metal-mesh projected-capacitive touch screens is compared through measurements and simulations. The effects of cover lens properties, shielding plane presence, and susceptibility to electromagnetic noise are assessed and discussed as they differ between metal-mesh and ITO sensors.

**F3.3: Bigger that Is Better: How to Select the Best Large-P-CAP Touchscreens for Outdoor Environments (3:30)**

*Binay Bajaj*  
*UICO, Elmhurst, IL, US*  
*Booth 1405*

As the demand for larger P-CAP touchscreen sizes increases in vertical markets, the performance must match. Vertical markets require use with very thick gloves, tons of water falling on the screen, and temperature extremes. UICO, a leader in outdoor P-CAP touch performance, will show how these challenges are met, and how to avoid pitfalls when selecting a touchscreen solution.

**BREAK (3:45–4:00)**

---

**DISPLAY DESIGN AND MANUFACTURING**

---

Tuesday, May 22 / 4:00 – 6:15 pm / West Halls AB

**F4.1: Laser Micromachining Systems for the Industrial Production of Glass and Display Components (4:00)***Jan Klinger**3D-Micromac AG, Chemnitz, Germany**Booth 631*

This talk will provide an introduction to 3D-Micromac's product portfolio for laser-processing of glass and display components. Processes like filamentation glass cutting, laser lift-off, and laser annealing, as well as ablative laser processes, will be discussed. A special focus will be on the excimer-based line-beam process for  $\mu$ LEDs or comparable devices.

**F4.2: New Technology for Large Displays (4:15)***Quinn Sanford**3M, St. Paul, MN, US**Booth 929*

3M has developed a new, disruptive technology for large displays. Like other 3M materials, this new solution is bright and energy efficient, with a wide-viewing angle designed for consumer preferences. It allows entitlement thinness and supply chain simplicity at a value that enables every television to be a 3M TV.

**F4.3: Laser Processing for Advanced Display Manufacturing (4:30)***Qiongying Hu**Coherent, Inc., Santa Clara, CA, US**Booth 551*

Display technology is progressing at breathtaking speed, and laser processing plays a vital role in the manufacturing of displays based on new technologies for patterning, LTPS-annealing (ELA), laser lift-off (LLO), laser-induced forward transfer (LIFT), and a variety of repair processes. Coherent will highlight new laser products and novel laser processes that support the high-volume manufacturing of flexible OLEDs and enable the advent of  $\mu$ LED-based displays.

**F4.4: LCD Modules and HMI Systems for a Total Solution (4:45)***Jasmin Ren**Haier Group, Qinagdao, China**Booth 205*

Haier is a maker of LCD modules in a range of sizes for a variety of applications, including mobile devices, home appliances, robotics, and more. In 2017, Haier acquired touch-panel maker DTI. Now Haier is able to create modules with built-in touch capability for advanced levels of human-machine interaction (HMI).

#### **F4.5: Protect Your Device**

**(5:00)**

*Bob Lemmons*

*New Vision Display, Orlando, FL, US*

*Booth 643*

Smartphones, tablets, point of sale (POS) terminals, medical equipment, and various handheld devices are expensive tools we use daily for personal and professional reasons. The displays and touch panels on these devices are critical to their function, and costly, yet they're often left unprotected. Damage from a single drop or scratch, or simple daily wear-and-tear can render them useless. During this presentation, New Vision Display will share the incredible capabilities of chemically strengthened glass and how it can be utilized in product builds, as well as in aftermarket applications, to provide long-term durability and exciting customization.

#### **F4.6: Display Solutions**

**(5:15)**

*Wu Pascal*

*Rocktech Displays, Ltd., Shenzhen, China*

*Booth 1504*

Rocktech Displays, established in 2002, has two LCD factories in Shenzhen that focus on TFT-LCD design and manufacturing, as well as customized total solutions. The company offers qualified and competitive TFT-LCD modules from 1.44 to 19 inches, services such as the customization of FPC interface/structure, backlight structure/luminance, open frame/monitor structure, the assembly of assorted sizes of CTP/RTP, and the design and manufacture of A/D board/Android system boards, TN/STN/FSTN mono LCDs, and COG/TAB/COB mono LCMs.

#### **F4.7: Solutions for Display Design**

**(5:30)**

*Thomas Blaesi*

*Silvaco, Inc., Santa Clara, CA, US*

*Booth 1018*

Silvaco, a leading provider of IP and EDA software tools used for the design and development of displays, will discuss its TCAD-to-signoff solutions, with emphasis on enabling the design of the next generation of TFT, LCD, LED, and OLED products.

#### **F4.8: Get Ahead in Functional Fluid Applications with Inkjet Technology**

**(5:45)**

*Michael Sean*

*Xaar, Cambridge, UK*

*Booth 314*

From concept to industrial application, functional fluid development can involve numerous steps to achieve success. Learn how Xaar can help on this journey, using its portfolio of piezo inkjet printheads with wide operational latitude and its capability to vet fluids for jetting suitability. Xaar also offers application testing resources and support for commercialization.

#### **F4.9: Digital Printing for 3D Display Matrix Formation with Simultaneous Filling of Cell Arrays with Quantum Dots**

**(6:00)**

*Oxana Astapova*

*IQDEMY SA, Sierre, Switzerland*

*Booth 540*

IQDEMY's objective is to accomplish new technology for energy-efficiency enhancement and color-gamut improvement in displays using digital printing for 3D matrix formation with simultaneous filling of cell arrays with quantum-dot material. The company's digital printing technology with QDs brings new, cost-effective ROHS-compliant opportunities for manufacturers to create high-resolution displays with extraordinary color gamut.

# WEDNESDAY, MAY 23

Session F5

Exhibitors' Forum

---

## AUTOMOTIVE TECHNOLOGY AND APPLICATIONS AND AR/VR

---

Wednesday, May 23 / 9:45 – 11:30 am / West Halls AB

### **F5.1: Technologies for Automotive Applications (9:45)**

*Wu Jerry*

*Dexerials Corp., San Jose, CA, US*

*Booth 1339*

Dexerials started as a company that manufactured only consumer electronics products. By advancing core material technologies as well as process technologies, it created a series of value-added products for various automotive applications as well as consumer electronics. Dexerials is presenting solutions for displays, cameras, mirrors, head-up displays (HUDs), and battery applications.

### **F5.2: Technology for the Future (10:00)**

*Robert C. Dohring II*

*Futaba Corp. of America, Plymouth, MI, US*

*Booth 1036*

Futaba has been producing vacuum fluorescent displays (VFDs) since the 1950s for consumer products, and since the 1970s for the automotive industry. During the last few years it has added OLEDs and projected capacitive touchscreens (CTPs) to its product offerings. The company's three main divisions are electronic components, machinery & tooling, and electronic systems.

### **F5.3: Augmented-Reality Head-Up Displays in the Era of Driverless Cars (10:15)**

*Seth Coe-Sullivan*

*Luminit, Torrance, CA, US*

*Booth 1311*

Head-up displays (HUDs) are gaining mainstream adoption in cars just as discussions and demonstrations of autonomous vehicles are gaining momentum. These two major trends in the automotive market are seemingly at odds, but upon closer inspection one trend may in fact enable the other. This talk will seek to address the conflicts and complements of these two new technologies as they attempt to make the roads safer for all of us. The future when all cars are driverless, without even the accommodation for human control, is no doubt decades from now. In the meantime, the display, and likely the HUD, will play a critical role in the more-prominent-than-ever man-machine interaction that are automobiles.

### **F5.4: Chemically Strengthened Glass for Automotive Displays (10:30)**

*Neil McSporran*

*NSG Pilkington, Toledo, OH, US*

*Booth 441*

The application of NSG glanova as a 3D formed cover glass for automotive displays will be described. NSG glanova is a specially formulated glass composition designed to be chemically strengthened, giving high compressive stress and depth of layer (DOL). Its low softening point allows the use of conventional heat-forming processes.

**F5.5: Automotive-Grade Silicone LOCAs (10:45)**

*Jason Rouse*

*Wacker Chemical Co., Adrian, MI, US*

*Booth 1444*

The development of automotive-grade display bonding liquid optically clear adhesives (LOCAs) and other adhesives will be reviewed with emphasis on UV-activated curing systems. Wacker's LUMISIL UV-grade LOCAs and SEMICOSIL 82X UV adhesives utilize a special catalyst system allowing high-throughput without sacrificing environmental stability.

**F5.6: High-Index Glass Wafers Enabling the Next Level of Augmented-Reality Experience (11:00)**

*Dr. Rüdiger Sprengard*

*SCHOTT AG, Mainz, Germany*

*Booth 1045*

What is unimaginable today – the not-so-far-off future experience of augmented reality – will change our everyday life at work, during leisure time, and when we communicate in general. SCHOTT high-index glass wafers are a key component in the optical system of AR devices, directly influencing the visual user experience, particularly increasing FoV and image quality. The excellent glass-wafer quality enables best-in-class device performance. In addition, the SCHOTT high-index glass wafers may come with a single- or double-side anti-reflective coating with tailored transmission and surface roughness.

**F5.7: HD-Color Display on Water-Clear Emissive Screen (11:15)**

*Dr. Ted Sun*

*Sun Innovations, Inc., Fremont, CA, US*

*Booth 1513*

Sun Innovations' new, fully transparent HD color display enables an advanced AR display on any glass. The product features compact body design, high optical efficiency, low power consumption, high-luminance emissive display, and standard HD video interface.

**LUNCH (11:30–3:00)**



---

**OLEDs**

---

**Wednesday, May 23 / 3:00 – 4:00 pm / West Halls AB****F6.1: OLED Strategy and Business Plan (3:00)***Brian Kao**BOE Technology Group Co., Ltd., Beijing, China**Booth 705*

In this presentation, the company will introduce BOE's OLED business strategy and technology direction. BOE will focus on its small- and medium-size panel business and its large-size OLED panel technology development over the next few years. Some flexible OLED display technology will also be introduced. With continuous investment in OLEDs, BOE will provide the best products to service its customers.

**F6.2: OLED Display Aging Process Considerations (3:15)***John Tessitore**Chroma ATE, Inc., Irvine, CA, US**Booth 614*

With over 30 years of providing custom high-volume characterization solutions, Chroma presents to the display community an overview of features and considerations for OLED display aging processes. Included will be strategies ranging from aging recipe optimization to automated display characterization.

**F6.3: Hyperfluorescence – The Ultimate OLED Emitter (3:30)***Daniel P. K. Tsang**Kyulux, Inc., Boston, MA, US**Booth 238*

Kyulux is commercializing the ultimate OLED emitter, hyperfluorescence. This new technology, which provides a narrow emission spectrum with very high quantum efficiency, has tremendous potential. The latest development status with industrial partners will be presented. Kyulux is going to launch these materials in the market this year.

**F6.4: Non-Crystallizable, Soluble, Small-Molecule OLED Materials (3:45)***M. F. Molaire**Molecular Glasses, Inc., Rochester, NY, US**Booth 553*

Molecular Glasses introduces a revolutionary new class of OLED materials that have a soluble, non-crystallizable, small-molecule structure. Breaking the mold of existing materials, OLEDIQ has demonstrated significant improvement in performance and is an ideal platform for the development of high-efficiency, long-lasting OLEDs for manufacturing by either vacuum-thermal deposition or solution processes.

**BREAK****(4:00–4:15)**

---

**e-PAPER AND FLEXIBLE DISPLAYS**

---

**Wednesday, May 23 / 4:15 – 5:00 pm / West Halls AB****F7.1: e-Paper 2.0 – Enabling Applications (4:15)***Flora Yang**CLEARink Displays, Fremont, CA, US**Booth 208*

Reflective displays have been sought after for their low power, sunlight readable attributes but affordable color and video have been elusive until “e-Paper 2.0.” This talk will review the progress of a novel reflective display technology with video speeds and high luminance that can be manufactured in an LCD factory. CLEARink Displays is a Silicon Valley startup that was spun out of the University of British Columbia. The technology is based on total internal reflection (TIR) and electrophoresis. The displays were first shown at SID’s Display Week 2017 and won the “Best in Show” award. Accompanying the talk will be live demos of the displays that feature 80%+ white state reflectance and video running at over 30 frames per second.

**F7.2: Low-Cost, Conformable Organic LCDs on Plastic and Their Applications (4:30)***Simon Jones**FlexEnable, Cambridge, UK**Booth 1338*

FlexEnable has developed a new display technology known as organic liquid-crystal display (OLCD). OLCD uses an organic TFT (OTFT) backplane and a liquid-crystal frontplane. The display construction is fully plastic, which means that it does not use silicon layer or glass material, allowing it to be curved down to 10-mm bend radius and scaled to large sizes at low cost. FlexEnable will discuss the industrialization of OLCD and its performance, as well as applications that require conformable and shapeable displays with high luminance and long lifetimes.

**F7.3: Turning the Page: New Applications for Electrophoretic e-Paper Technology (4:45)***Michael McCreary**E Ink Corp., Billerica, MA, US**Booth 521*

The unique performance characteristics and proven manufacturability of E Ink electrophoretic e-Paper is enabling many new exciting applications. In addition to a paper-like, non-mirror look, flexibility and bright, full-color displays are important factors in the adoption of this enabling, expanding technology.

# THURSDAY, MAY 24

Session F8

Exhibitors' Forum

---

## QUANTUM DOTS AND MICRODISPLAYS

---

Thursday, May 24 / 9:15 – 10:00 am / West Halls AB

**F8.1: RoHS-Compliant Perovskite QDs for Display Applications (9:15)**

*Samuel Halim*  
*Avantama AG, Staefa, Switzerland*  
*Booth 538*

Avantama perovskite QDs show best-in-class performance (quantum yield, full width at half maximum) while fulfilling the display industry's reliability specifications. The perovskite QDs presented show a 3 to 12× higher absorbance than cadmium- or indium-based QDs, making them the ideal solution for QD color-conversion pixel applications (LCDs, OLEDs, uLEDs).

**F8.2: Quantum-Dot Luminescent Microspheres for Cost-Effective QD Displays (9:30)**

*Lei Yang*  
*Tianjin Zhonghuan Quantum Tech Co., Ltd, Tianjin, China*  
*Booth 308*

By applying its unique coating technique on QD material, ZH-Qtech has created a brand new product: QLuMiS. While reserving the traditional advantages of QDs, the coating technique has greatly improved the material's stability, and reduced production cost. QLuMiS is suitable for multiple types of packaging (e.g., on-chip, remote, and others).

**F8.3: Microdisplays and Sensors Enhanced by OLEDs (9:45)**

*Bernd Richter*  
*Fraunhofer FEP, Dresden, Germany*  
*Booth 613*

This talk will provide an overview of recent developments such as a new 1-in WUXGA microdisplay that can be operated at 120 Hz. In addition, low-power microdisplays and special applications of bidirectional microdisplays, e.g., in optical fingerprint sensing, will be discussed.

**BREAK**

**(10:00–10:15)**

---

**DISPLAY COMPONENTS**

---

Thursday, May 24 / 10:15 – 11:30 am / West Halls AB

**F9.1: Innovative Solutions for High-Efficiency LED-Based Edge-Lit Lightguides (10:15)***Jon Doucet**Global Lighting Technologies, Brecksville, OH, US**Booth 937*

Global Lighting Technologies, Inc., is a world leader in new and innovative solutions for high-efficiency LED-based edge-lit lightguides. These innovations include individualized functions for edge-lighting including “zoned” lighting areas (in-mold light-block capability/extraction features), distinction ratio, and stacked lightguide options (layered with offset optics and LED colors).

**F9.2: Power Capacity Transfer into the Thin Display Assembly (10:30)***Gregory Young**I-PEX USA, LLC, Austin, TX, US**Booth 510*

Thermal analysis was used to determine the power delivery capacity of the connector-cable into a thin display assembly for LED backlight and TCON power needs. A thermal couple measured  $+\Delta 30$  °C rise from room temperature to determine the maximum current flow through the I-PEX embedded low-profile (VESA-eDP) CABLINE graphics connector.

**F9.3: A Solution to Provide 3D Content with Your Smartphone (10:45)***Edison Yeh**Theia, Ltd., Zhubei, Taiwan**Booth 1544*

Theia will present its total solution to the biggest problem that holds back 3D applications — a lack of content. Theia's first product is a phone case (with an app), that allows you to see 3D with the naked eye, convert 2D content to 3D, and record 3D videos.

**F9.4: Analytical Services for Displays and Peripheral Components (11:00)***Lisa Wang**Toray Research Center, Inc., Tokyo, Japan**Booth 1505*

Toray Research Center (TRC) is one of the affiliated companies of Toray Industries, Inc., and introduces analytical techniques for OLEDs, LCDs, TFTs, etc. TRC's problem-solving skills and superior ability to meet the requirements of clients are based on a long track record and extensive experience in analysis and materials characterization.

**F9.5: USB Industrial Monitor (11:15)***Gina Lum**JMO Display, Singapore**Booth 1543*

JMO Displays' selection of portable USB monitors is packed with high-performance components and intuitive features; these monitors are capable of handling any kind of process you can throw at them. Regardless of whether customers need a multitouch monitor with compatibility with JMO's USB extender or an open-frame display, JMO's industrial monitors have it covered.