



The Innovation Zone at Display Week 2024

Welcome to the Society for Information Display's 13th Innovation Zone. The I-Zone was created to provide researchers with space to demonstrate their prototypes or other hardware demo units at the premier display exhibition in North America. The I-Zone also offers Display Week attendees a chance to view best-in-class emerging information display technologies in a dedicated area on the show floor. Access to this exhibition space was earned through a highly competitive selection process.

The I-Zone takes place Tuesday, May 14, through Thursday, May 16.

The Best Prototype winner will be announced on the show floor Wednesday morning, May 15.

Sponsored by



Chongqing Zhiwei Display Co., Ltd. 1740/17

Chongqing Zhiwei Display offers active-matrix electrochromic thin-film displays with low driving voltage (as low as 0.3V) and long service life (more than 1 million switching times). The product has very low power consumption, which is less than 1% of the conventional LCD and OLED displays. The company's upcoming matrix display series products will greatly promote the development of smart conference, smart retail, smart transportation, and digital advertising.

123461567@qq.com

Electronics and Telecommunications Research Institute (ETRI) 140/2

Explore ETRI's groundbreaking multifocal MPEG Immersive Video (MIV) system. This integration pairs an MIV player with a multifocal OLED display, using OLEDoS microdisplay and focus-tunable lens technologies. ETRI's solution transforms MIV content into lightfield video adjustable from 1 to 3 diopters, greatly reducing vergence-accommodation conflict (VAC). This enhancement minimizes discomfort such as dizziness, offering a more immersive and enjoyable extended reality experience. You can experience our prototype in both wearable and benchtop formats.

www.etri.re.kr/eng/main/main.etri

eLStar Dynamics B.V. 1740/15

eLStar Dynamics is a leading developer of versatile technology for adaptive glass. Its smart glass technology offers superior controlled and sustainable visual comfort, targeting a wide range of applications in architecture, automotive, and more. It is a world class development and research team based in Eindhoven, the Netherlands, with an abundance of experience in display development, commercialization of technology, and project management. Years of extensive research and testing have enabled it to create a technology that will redefine the

way we look at our windows. ELstar offers a solution that is optically superior across both visible and NIR spectrums and can be produced in any color imaginable at the most competitive cost.

<http://elstar-dynamics.com>

ETRI Superintelligence Creative Laboratory 140/6

ETRI Superintelligence Creative Laboratory is developing a novel mini-/microLED assembly technique, a so-called simultaneous transfer and bonding (SITRAB) technology. The main highlights of its technology are as follows: enables the simultaneous transfer and bonding of mini-/microLEDs on display backplanes without any residue or fumes; is conducted at room temperature, minimizing the misalignment caused by thermally induced warpage of display substrates and SITRAB interposers for high-resolution mini-/microLED display fabrication; owing to the outstanding laser pot life of SITRAB adhesive, the mini-/microLEDs on the display backplane can be easily trimmed and repaired.

www.etri.re.kr

Holst Centre (TNO) 140/1

The increasing adoption of miniaturized microLED-based displays emphasizes the need to develop technology that is fast, cost-effective, and accurate for the transfer of micro-components. Holst Centre has developed a proprietary release stack that enables the fast release of micro-components with high selectivity using a low-cost laser source. By monolithically fabricating dummy dies on the release stack, Holst validated its technology's compatibility with dies of varying sizes, aspect ratios, and adaptive pitches.

<https://holstcentre.com>

Jingce Electronic, USA **140/3 and 140/8**

Wuhan Jingce Electronic Group Co. is a high-tech enterprise that focuses on FPD testing, semiconductor testing, and new energy testing. Its products include module test systems, panel test systems, OLED test systems, AOI systems, touch-panel test systems, and FPD automation equipment, which have passed ISO9000-2008 Quality Management System Certification and CE certification of the European Union. Jingce is demonstrating two technologies: one that uses edge computing in display inspections, and one that uses a line scan imaging system to capture 2D-array spectrums.

www.wuhanjingce.com

Liqxtal Technology **1740/21**

Liqxtal presents a reflective displayable technology named Liqxtal Graph, which is able to display images to passersby with limited obstruction to the vision of wearers. An eyewear adopting this technology displays colored images with a resolution of 50 pixels per inch and a contrast ratio over 15. The viewing angle of the wearer is almost the same as existing glasses and keeps a high MTF performance. Integrated with a virtual platform and wireless control, the glasses can serve as a novel interaction medium between individuals.

www.himax.com.tw/products/liqxtal-technology

Looking Glass **140/9**

Looking Glass is a market leader in group-viewable 3D displays. It will demonstrate its newest innovations, Looking Glass Go and Looking Glass 16" OLED, in two orientations. Looking Glass Go is the first portable 3D display designed for spatial memories. Looking Glass 16" OLED combines the brilliance of OLED color depth and spatial depth in 4K resolution, available in portrait and landscape orientation. All Looking Glass displays are group-viewable 3D displays that do not require the use of headsets to experience hyper-realistic 3D images and video.

<https://lookingglassfactory.com>

MD Optical Design **1740/12**

Combined multicolor LED light sources generate a wide range of colors and correlated color temperatures (CCTs). There are, however, challenges to overcome before such high-quality light sources can be produced. The MD Optical Design Color Management System addresses those challenges. A smart LED driver controls eight channels. Each channel uses smooth-amplitude modulated output signals, thus providing zero-flicker illumination, unlike many existing drivers that use PWM. Using a spectral feedback loop accurately maintains CCT and color point. Possible applications include studio/movie shooting, advertisement panels, color calibration standards for microLED/display manufacturing, paint mixing, automotive paint booths, cosmetics appearance, and exhibition light management.

<https://mdoptical.design>

Panamorph **1740/14**

For over 30 years, Panamorph and its prior affiliates have been pioneers in the development of cutting-edge proprietary visual display technologies represented by over 30 issued US patents in areas including virtual-reality optical systems, advanced image processing and presentation algorithms, and specialized optical components. At the 2024 Display Week I-Zone, Panamorph will be demonstrating its new Exit Pupil Modulation technology, which dramatically increases contrast and clarity in LCD-based VR headsets to exceed those using OLED.

www.panamorph.com/vr-hmd

Q-Pixel, Inc. **140/7**

Q-Pixel's proprietary Tunable Polychromatic microLED (TP-LED) revolutionizes the microLED display industry with a full, tunable color spectrum across a single pixel, without the use of subpixels, quantum dots, color filters, polarizers, or mechanical stacking, for a fully industry-compatible process. By replacing three RGB subpixels, Q-Pixel's single TP-LED simplifies display assembly, reduces manufacturing costs, and enables world-record pixel densities for ultra-high resolution displays suitable for AR/VR/XR. Q-Pixel holds world records for highest full-color display (10,000 PPI, Nov. 2023), smallest full-color pixel (1-micron diameter, Nov. 2023), and has demonstrated the world's highest resolution (6,800 PPI) color active-matrix display.

www.q-pixels.com

SCALE Nanotech OÜ **1740/13**

SCALE Nanotech is a digital startup from Estonia operating in Spain that provides R&D and consulting services. It coordinates the MEGAMORPH project: Market-Entry of Graphene-based large-Area MODulators with a Radical Production of Holographic displays. The goal of the project is to further develop its disruptive imaging technology: Graphene Interferometric MODulator Display (GMOD).

<https://megamorph.eu>

www.scalenano.tech

SN Display Co., Ltd. **1740/16**

SN Display Co. has 32-in. TV and 11-in. tablet prototypes with perovskite down-conversion films. SN Display specializes in next-generation display materials and devices to show hyper-realistic colors through advanced technologies based on its original patents. It offers perovskite nanocrystals (PeNCs), PeNC resins, and down-conversion films for down-conversion displays that enable bright, wide color spaces with high color purity.

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Soochow University **1740/20**

Existing displays are mainly pixelated flat-panel display or surface transparent display technology, which cannot realize transparent spatial depth based on flat-panel shapes. The researchers first proposed a virtual-real fusion

spatial transparent display. The display mode is a leading and unreported spatial display mode based on a transparent nano lightfield screen. A flat transparent lightfield screen can image in the depth space to achieve the fusion of "physical space" and "virtual display." It can be used in exhibitions, education, entertainment, vehicle displays, consumer displays, etc., and will be a new display method with diversification, wisdom, and virtual-real interaction.

<http://eng.suda.edu.cn>

State Key Laboratory of Advanced Displays and Optoelectronics Technologies, The Hong Kong University
1740/19

A new technology for ultrathin dichroic polarizers that uses photoalignment technology has been introduced. This cutting-edge polarizer boasts a record-breaking dichroic ratio of over 150 in the blue band and is ultra-thin, with a submicron-level thickness. These features make it a perfect fit for use in liquid-crystal cell fabrication, as well as in ultrathin, flexible devices, and in-cell applications. When combined with photoluminescent color filters, this polarizer can create advanced color-conversion LCDs with no parallax, high efficiency, wide viewing angles, and a wide color gamut.

<https://skl.hkust.edu.hk/lzone.htm>

University of Tsukuba **1740/18**

The researchers demonstrate an integral imaging display with a fine interleaved Fresnel lens array combined with eye-tracking technology. A high-resolution aerial 3D image with a wide viewing zone is realized in the proposed system. The quality of the 3D image presented with this technology is equivalent to that of a hologram, while the technology enables a real-time electric video presentation, achieved by reducing the number of draw calls in multi-view rendering.

www.tsukuba.ac.jp/en

Utsunomiya University, Visual Media Lab **140/5**

The authors present a pair of high-resolution aerial (virtual-image and real-image) 3D displays based on coarse integral imaging with small interleaved elemental lenses. The quality of the 3D image presented with their technology is equivalent to that of a hologram, while the technology enables a real-time electric motion video presentation. With face-tracking technology to generate light-ray space around the eyes to follow the motion of the viewer, a high-resolution image is presented across a wide viewing angle.

<https://visual-media-lab.github.io/en/index.html>
www.utsunomiya-u.ac.jp/en

VueReal **140/4**

Low-cost head-mounted displays (HUDs) for several applications (sports, informatics, etc.) are essential. VueReal microSolid printing allows the integration of very small flipchip microLEDs, and VueReal has developed a small flipchip microLED <7um for these types of applications. These developments and low-cost backplane technology (passive matrix) have enabled VueReal to fabricate displays for head-mounted applications.

<https://vuereal.com>

Yongjiang Laboratory **1740/22 and 1740/23**

Focusing on new materials and related areas, Y-LAB is committed to delivering cutting-edge basic research, developing world-changing technologies and creating a sustainable innovation ecosystem. Two technologies will be demonstrated. One is photon-to-photon latency test equipment VST for VR/MR products, which includes a signal generation module, a specially designed signal transmission module, a high-precision signal detection, and a central control and processing module, which achieves a delay test accuracy of 0.08ms. The second is a high-precision human eye simulation device, which primarily consists of four key components: an eyeball model, a motion control system, a dynamic AI model of the human eye, and an intelligent autonomous tracking algorithm.

www.ylab.ac.cn/en

2024 I-Zone Committee

2024 I-Zone Co-Chairs

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Zhou Li	BOE Technology Group
Natalia Rueda	AGP Glass eGlass
Qun (Frank) Yan	Fuzhou University and SID China

**Best I-Zone Prototype
and Honorees will be announced
in the I-Zone area on the
morning of Wednesday, May 15!**

I-Zone Floor Plans

Please note that I-Zone exhibitors are divided into two areas on either side of the back of the exhibit hall.

