

I-Zone

The Innovation Zone at Display Week 2012

Welcome to the Society for Information Display's inaugural 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 the free exhibition space was earned through a highly competitive selection process designed to encourage participation by small companies, startups, universities, government labs, and independent research labs.

The I-Zone, sponsored by E Ink, takes place Tuesday, June 5, and Wednesday, June 6.



Atticus GmbH

Atticus GmbH, located in Wels, Austria, supplies 22-in. 3D-TFT-monitors featuring a new 3D technology that works without glasses. This technology was developed for the gaming industry but can be used in other applications as well. Additional advantages of the Atticus technology are energy efficiency, full-panel resolution, high contrast ratio, wide color gamut, and 2D compatibility.

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Citizen Holdings Co., Ltd.

This R&D project underway in the development division of Citizen Holdings Co., Ltd., involves the development of a user interface (UI) robot using a MEMS-based pan-tilt laser projection head in combination with a hand-tracking sensor. The robot system can detect and track a palm or finger of a hand and then project a virtual remote controller (VRC) image on the top of a palm or a table. The user can easily access any network or other remote controlled equipment via VRC.

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Dow Corning and FLEx Lighting

Dow Corning, a global leader in silicones, silicon-based technology, and innovation; and FLEx Lighting, a world leader in innovative lighting solutions, have combined innovations in silicone optical materials and optics design to create LED-based illuminated films for front and back lighting in mobile device displays such as e-readers, mobile phones, and tablets. This pioneering technology produces a soft, uniform glow using a single LED and a thin layer of film acting as a light guide. In an e-reader application, the

film can be turned on/off as needed to conserve power. Interactive product samples and videos will be on display.

www.dowcorning.com
www.flexlighting.com

eMagin Corporation

eMagin Corporation will provide a demonstration of the SXGA AMOLED demonstrator microdisplay that the company states is the highest dot density ever accomplished in any size display of any technology to date. The 8.1 micron SXGA demonstrator AMOLED microdisplay proves the concept of creating a QSXGA AMOLED microdisplay at 1.05 inches diagonal active area.

www.emagin.com

Industrial Technology Research Institute

The Industrial Technology Research Institute (ITRI) is a nonprofit R&D organization engaging in applied research and technical services. Founded in 1973, ITRI has played a vital role in transforming Taiwan's economy from a labor-intensive industry to a high-tech industry. ITRI's Display Technology Center (DTC) has developed re-writable and re-usable e-paper technology and is currently licensing and transferring the re-writable and re-usable e-Paper technology to manufacturers for their production of consumer e-paper. Recently, ITRI completed an industry science and technology program with material manufacturers and equipment makers, and the technology has also been transferred to one of Taiwan's top chemical engineering manufacturers for trial mass production.

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Kent State University

Concepts for liquid-crystal based lenses are not new. However, an LC-based lens of sufficient optical quality and size for many applications has not been demonstrated. This approach uses LC-based lenses that are continuously tunable and provide high image quality. Researchers will show a novel lens design in detail, and provide an on-site demonstration of the lens operation.

www.kent.edu

Kyoritsu Optronics Co., Ltd.

Kyoritsu Optronics is developing amplified intrinsic fringe field (AIFF) MVA LCDs for high-transmission, low-power smart phones, GPS devices, tablets, and retina display applications. The AIFF MVA design eliminates all protrusions and ITO slits in TFT and CF substrates, resulting in high transmission and high yield. AIFF processing is low cost, does not require a special UV process or PI rubbing, and uses standard IC, LC, and PI materials. Moreover, it is compatible with the RGBW square pixel designs for green LCD applications because AIFF MVA is the only LCD mode without edge disclinations. Through R&D collaboration with E Ink Holdings Inc., Kyoritsu has recently developed two new prototypes using AIFF with regular a-Si TFT at 68% NTSC and without a planarization layer: a 7-in WVGA with 6.0% transmission and 2290 contrast ratio, and a 4.3-in WXVA retina display with 3.6% transmission and 1190 contrast ratio. Both of these prototypes will be demonstrated.

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Kyushu University and Network Application Engineering Laboratories, Ltd.

Kyushu University and Network Application Engineering Laboratories, Ltd., have developed a new wireless power-transfer system for mobile devices that employs a capacitive-coupling between receiving and transmitting devices, and allows a wider positioning and ease of resonant control in comparison with commonly used inductive coupling systems. The demonstration will include battery-less e-Paper communicating with a PC via Bluetooth, and a power-transmitting module with resonant frequency and input voltage controlling. This technology can also be applied to many kinds of mobile devices to charge their batteries.

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Lumiode

Lumiode is developing a high-brightness, high-efficiency light engine based on the monolithic integration of an LED array and a laser-crystallized silicon backplane. When fully developed, this platform will allow for the fabrication of an emissive display with megapixel addressable sizes and multi-kilolumen output. Lumiode's target application areas include both display markets (such as microdisplays, head-up displays, and pico projectors) and other non-display markets (such as 3D scanning, computational photography, and biomedical imaging).

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Luxint, Inc.

Luxint has developed a solid-state light-source technology that simultaneously meets the etendue, brightness, and cost requirements of projectors ranging from embeddable to cinema applications. The novelty in this technology is utilizing commercially available 405nm and 445nm lasers to drive low-cost phosphor-based optical modules generating speckle-free red, green, and blue (RGB) light with 15-100lm/W efficacies at etendue values 5-50x lower than that of LEDs. The company's solution is scalable, as a large number of 405/445nm lasers can be combined to provide RGB brightness of >150,000lm with a lifetime of 30,000-60,000 hours, meeting cost and performance demands of large venue and cinema projectors.

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Mirametrix

Mirametrix consumer eye-gaze technology allows a user to interact with virtual or real-world objects in 3D physical space or display environments using their eyes, without the need for head-mounted equipment or expensive add-on hardware. It provides accurate eye-gaze estimates in long-range living room environments. The instant-setup system allows for free-head motion, and natural body movement. The solution is complemented by a powerful analytics system that enables state-of-mind monetization.

<http://mirametrix.com>

National Chiao Tung University and AU Optronics Corp.

In this exhibition, the world's largest field-sequential-color (FSC) LCD without color filters will be demonstrated. To suppress the well-known color breakup problems for FSC displays, the researchers proposed a 180Hz Stencil-FSC method and implemented it on a 65-inch MVA (multi-domain vertical alignment) type color filter-less LCD that has been provided by AU Optronics Corp.

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Off Grid Technologies, LLC

Combining LEDs in the visible and/or invisible (IR) spectrum with PMMA (Poly Methyl Methacrylate) optical fibers, an "LED/Optic Display" is implanted by a high-speed machine defining the segments of a size-independent, digital, alphanumeric display. Employing PWM (Pulse Width Modulation) to control the current output, multiple digits in multiple sizes and colors are able to be displayed without increasing current draw. This technology is robust enough to withstand puncturing, can be powered by small PV film, and worn on a sleeve for displaying electronic multi-meter, temperature, speed, elevation, bio-physical, time, and other data in the visible or invisible spectrum for possible military applications.

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Opalux, Inc.

Photonic Ink (P-Ink) uses an ordered internal nanostructure to generate vivid reflective colors, which can be tuned electrically to display any color of the rainbow. Using printed electronic technology, it is applicable to both rigid and bendable display; features competitive costs, high brightness, low power consumption, and bi-stability; and can be readily segmented or pixilated. It is ideal for colorful display applications of all types, settings, and sizes. Opalux will feature flexible, high brightness (>65% reflectivity), color-changing films of various form factors and sizes based on P-Ink technology. These films are activated by low-voltage electrical input, allowing them to be switched with both conventional as well as non-traditional power sources such as RFID, NFC, and photovoltaics. The flexible films can be embedded with arbitrary graphics, creating color-changing graphics, logos, and textures.

www.opalux.com

Orthocone Innovation Technologies AB

Orthocone AB is developing a novel liquid-crystal technology, orthoconic antiferroelectric liquid crystals, which allow fast (100 μ s) switching with a wide-angle dark state insensitive to misalignment. The fast switching will allow color generation by using field-sequential color. Orthoconics opens up the possibility of greener displays with low energy consumption and easier production. It will also provide better image quality as well as three times higher spatial resolution. The company will demonstrate an orthoconic liquid-crystal cell under field-sequential operation. The frequency will be 720Hz, high enough to

avoid color breakup. This will be the first time orthoconics is demonstrated to the public.

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Planar Systems

On May 15, 2012, Planar Systems Inc. unveiled the TD3200, a new type of monitor that incorporates a transparent display to create a unique merchandising and exhibition solution. The 32-inch Planar[®] LookThru[™] Display Box is an enclosed showcase fronted by a glass display surface that can display multimedia content simultaneously with products placed inside the unit. Planar's approach to transparent displays provides best-in-class clarity, high contrast, excellent color saturation, and high brightness – traits not generally found in such displays to date. Planar plans to demonstrate the TD3200 along with a glass-front refrigerator transparent display prototype in the 2012 Innovation Zone.

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PolarScreens, Inc.

PolarScreens is a research and development company in the professional stereoscopic display market. Its first notable contribution is the variable polarized 3D display technology used and sold by MacNaughton Inc. and iZ3D. The company is currently developing a new eyewear-free 3D display technology capable of displaying full HD resolution for each eye. This technology combines a regular backlight, a 120Hz 3D LCD panel, a vertically patterned active-shutter panel, and a head-tracking system. The end result is capable of displaying a full resolution autostereoscopic image with complete head movement freedom. Polar Screens will be demonstrating a fully functional prototype.

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Sun Innovations, Inc.

Sun Innovations unveils cutting-edge transparent display technology in the world of transportation and digital advertising. Sun Innovations' MediaGlass[™] and TransPlay[™] custom-designed projection system displays vivid motion color images onto its patented water-clear emissive screen

made from proprietary nanoparticle materials. Sun Innovations' unique Full-Windshield Heads-Up Display system displays driving and electronic information in real-time anywhere on the windshield that is viewable at any angle. The company's advanced MediaGlass™ turns a storefront or vehicle glass to a fully clear digital signage portal. Sun Innovations' technology was the winner of 2011 R&D 100 awards and was featured as influential technology on ABC 7 News.

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Suzhou Institute, Chinese Academy of Sciences

A highly efficient wedged waveguide and prism array - based edge-lit collimated backlight is presented in this demonstration. The prototype exhibits a collimated beam with less than $\pm 3^\circ$ divergence and an enhanced photonic efficiency. The application of this novel backlight includes significant enhancement of the backlight photonic utilization due to lossless waveguide design; improvement of the panel image quality in terms of uniform brightness and high contrast ratio across all viewing area; and simplification of naked-eye 3D viewing with only a series of wedged prism films needed to realize a stereo effect.

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Tactonic Technologies

Tactonic Technologies provides Pressure Sensing Multi-Touch and Pressure Imaging components, products, and solutions. Tactonic™ Sensors act as 'surface video cameras' for pressure, capturing every aspect of contact on the surface. These pressure sensors can work with gloved hands or with any passive stylus. While they can be stand-alone components, the Tactonic disruption is in breaking size/cost barriers, enabling the creation of touch and pressure imaging surfaces of any size by using Tactonic™ Sensor Tiles. These tiles can be seamlessly abutted to produce an arbitrarily large touch surface. They can be produced for hand or foot/floor interaction and for industrial applications.

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Tactus Technology, Inc.

Tactus Technology is the developer of a next-generation tactile surface for touch-screen devices. Tactus has developed a unique technology that enables real, physical

buttons to rise out of the surface of a touch-screen device on demand. With the buttons enabled, users can locate and push down on the buttons as they would with any physical button or keyboard. When the buttons are disabled, they recede into the screen, becoming invisible and leaving a smooth, seamless, flat touch-screen with maximum viewing area. The company's tactile layer panel simply replaces the cover layer or "lens" of the display stack.

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TandemLaunch Technologies, Inc.

TandemLaunch has developed a fast image-restoring feature that is hardware friendly and delivers impressive image quality against any motion pattern. It allows users to deblur a picture taken from any kind of device with dual cameras. The technology is hardware friendly and robust, which makes it an excellent candidate for price-sensitive consumer electronic devices such as smartphones and tablets. The current prototype is composed of two tablets attached to each other and is designed to be a mobile application for any smartphone or tablet.

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~ 2012 I-Zone Organizing Committee ~

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~ I-Zone Selection Committee ~ includes above individuals and:

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