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## Editorial: LED Lighting will Change Everything

... Every technological revolution encompasses two distinct phases, and LED lighting is no exception. In the first phase, inventors work to adapt a new technology as some form of direct replacement for the incumbents while the second phase involves new applications that likely have never existed. LED lighting has started...  
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## Toyoda Gosei Files Patent Infringement Lawsuits Against Formosa Epitaxy Inc.

LIGHTTimes News Staff

February 28, 2012...On February 24, 2012, Toyoda Gosei Co., Ltd. filed a patent infringement lawsuit in Taoyuan District Court (Taiwan) against LED manufacturer, Formosa Epitaxy Inc. (Forepi). The lawsuit alleges that the Forepi is infringing Toyoda Gosei's Taiwan patents TW356608 and TW575971 regarding gallium nitride (GaN)-based LED chips and seeks an injunction against a plurality of Forepi LED products.

Prior to the lawsuit in Taiwan, Toyoda Gosei also filed a patent infringement lawsuit in the United States District Court, Northern District of California on February 21, 2012 against Forepi's infringement of Toyoda Gosei's U.S. LED chip patents including: US5753939, US6005258, US6040588, US6191436, US6265726, US6420733, US6933169, US7138286, seeking damages and an injunction against a plurality of Forepi LED products, amongst other remedies.

In a press release Toyoda Gosei noted, "To establish an environment of fair competition and for the further development and expansion of the LED chip market, Toyoda Gosei advises the fullest caution in respecting and avoiding infringements of patents relating to gallium nitride (GaN)-based light-emitting diodes when manufacturing, selling and/or using LED chips and products thereof."



## Sharp to Provide Hundreds of LED TVs for Attendees of TED2012 Conferences

LIGHTTimes News Staff

February 28, 2012...Sharp will showcase its LED TVs, residential PV solar appliance and solar charging stations as the new TV and display sponsor for the TED2012 Conference, in Long Beach California, and at conference simulcast, TEDActive, in Palm Springs, California.

"From the world's first 80-inch class LED TV to making solar energy more accessible, we are excited to demonstrate our leadership in innovative technologies at a conference dedicated to spreading new ideas," said Bob Scaglione, chief marketing officer of Sharp Electronics Corporation.

Sharp will reportedly provide more than 200 AQUOS LED smart TVs to the conference in large screen sizes from 40-inch to 80-inches. In Long Beach, conference attendees will be able to view the live presentations on big, beautiful TVs throughout the venue including dressing rooms, the ballroom, the lodge, the balcony, the press room and meeting spaces. In Palm Springs at the Riviera Resort and Spa, LED TVs will show conference presentations in the grand ballroom, foyer/bookstore, pool area, arcade and show

lounge. [LIGHTTimes SecondPage members login for more. Guests can view membership details.](#)

## Light-Emitting Nanocrystal Diodes Emit Ultra Violet

LIGHTTimes News Staff

February 28, 2012...A multinational team of scientists has developed a process for creating glass-based, inorganic UV LEDs. The work was reported online this week in [Nature Communications](#). The researchers say it is a step toward biomedical devices with active components made from nanostructured systems. The paper describes a new glass-based material that can emit light in the ultraviolet spectrum and be integrated onto silicon chips. The research team notes that LEDs based on solution-processed inorganic nanocrystals have promise for use in environmental and biomedical diagnostics, because they are cheap to produce, robust, and chemically stable. However, achieving ultraviolet emission has reportedly been difficult.

Los Alamos National Laboratory's Sergio Brovelli in collaboration with the research team lead by Alberto Paleari at the University of Milano-Bicocca in Italy in their paper describe a fabrication process that claims to overcome this problem and allows integration into a variety of applications. [LIGHTTimes SecondPage members login for more. Guests can view membership details.](#)



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For the latest news dedicated to LEDs in general lighting, tune to [Solid State Lighting Design](#). Applications updates, the latest luminaires and wins, subsystems and componentry in support of lighting in and around the built environment, it's all there!

### 2012 SSL Summit Series keeps its focus to Smarter, Better Lighting

Launched in 2008, the [SSL Summit](#) has tweaked its mission to facilitate a future of better lighting. October's New York City meet really hit the target, and we're picking up the pace for LA/Long Beach April 3-4, 2012. The Summit brings together key lighting influencers with industry thought leaders, pioneers, and innovators from the across the solid state lighting eco-system

to engage their visions of the future of lighting.

**Quality is the gate, the future is the focus...** **Showcase participants and sponsors are vetted to separate the wheat from the chaff...** Look into the series information at [www.SSLsummit.com](http://www.SSLsummit.com) for the details. Sponsorships and showcase positions are available now, and event registration will open in early January.



## SSL Summit Catalyzing Discussions on Future of LED Lighting

SSL Design/LIGHTimes Staff

*February 23, 2012...Austin, Texas -- The SSL Summit executive-level conference, coming up April 3-4 in Long Beach, California, is focusing a high-level dialog between the lighting industry and LED industry leaders, on the future of smarter, better lighting. The ability to control both the wavelengths and optical properties of lighting, to the degree that is enabled by LED lighting, has never before existed. The result, say the organizers, will be unprecedented new avenues of exploration for both the physical- and human-science of light. According to Tom Griffiths, Publisher of Solid State Lighting Design News and LIGHTimes Online, "What we're witnessing is the start of complete revolution in our environment that will be driven by smarter, better lighting. While the first revolution made it possible to bring light into our buildings and surrounds in a practical manner, this revolution will be about using light to optimize our everyday environment, much as we have used wi-fi and our PDAs to redefine how we conduct our business- and social-lives."* In this 7th edition of the the SSL Summit ([www.SSLsummit.com](http://www.SSLsummit.com)) delegates will join lead sponsor Philips Lumileds Lighting and co-chairs IES Vice President and founder of Lighting Design Alliance, Chip Israel and Director of the Smart Lighting Engineering Research Center, Dr. Robert Karlicek, to tackle both the whys and the hows of the path to a future of "smarter, better lighting". [Jump to the related commentary on the future of lighting in this edition...](#)

## MCLR Commissions Russian-based Production Facility of Substrates for LEDs

LIGHTimes News Staff

*February 23, 2012...Micro Components Limited Russia (MCLR) has commissioned a Russian-based production facility of substrates and panels for LEDs and electronic devices at its factory in Vladimir, Russia. MCLR is a joint project of venture capital fund Tamir Fishman CIG, created with RVC's. The company will manufacture the components primarily for LEDs requiring heat sinks. The new plant's entry into production is an important step in the partnership between RUSNANO and an Israeli high-tech company with direct input from a venture capital fund created by Russian Venture Company.*

RUSNANO, Tamir Fishman CIG (a venture capital fund established with RVC's participation and operating under the management of Innovation Solutions), and Micro Components Ltd. (the Israeli technology developer) are partners in the project with a total budget of 868 million rubles. Of that sum, RUSNANO is cofinancing 120 million rubles. [LIGHTimes SecondPage members login for more.](#) [Guests can view membership details.](#)

## LTP Provides LED Screens for Westfield Stratford City

LIGHTimes News Staff

*February 23, 2012...Lighting Technology Projects (LTP), under its current service provider role to Philips, has installed a high-resolution video wall (or vidiwall as the company refers to it) at the Westfield Stratford City urban retail mall in London, UK. The outdoor, LED-based video wall is adjacent to the Olympic Park. It is used for in-house advertising. It is featured at the main entrance of the new shopping centre and is one of the first digital displays to seen by customers upon arrival.*

Energy-efficient and offering optimum image quality, the screen provides an instant connection with consumers, and is anticipated to see more than seven million passersby during the 2012 Olympic Games. The project follows on from previous collaborations between LTP and Philips, which have included reinstating and illuminating video cylinders at the O2 Arena and the current ceiling mediascape at the Great Ormond Street Hospital.

LTP's Operations Director Keith Elms stated, *"The installation of the vidiwall, which works with the building's contour, is a great addition to this state-of-the-art shopping centre and ideal for Westfield Stratford's advertising scheme."*

## Luminit Introduces New Hybrid Glass Light Shaping Diffusers

LIGHTimes News Staff

*February 23, 2012...Luminit LLC, a producer of products for applications including LED lighting, architectural lighting, bio-medical, semiconductor metrology, aerospace, automotive and display applications, announced the availability of Hybrid Glass Light Shaping Diffusers. According to the company, the diffusers offer transmission (up to 92%) from 350nm to the visible light range. The optics can reportedly withstand temperatures of 150°C. They are available in numerous angles and sizes up to 20"x20" on optical glass or fused silica substrates. They can be made with AR coating on one or both sides. Hybrid Glass Light Shaping Diffusers are particularly valuable in applications that require higher temperature tolerance or higher scratch resistance than polymer based diffusers.*

Engin Arik, PhD, President & CEO of Luminit commented *"These new Hybrid Glass diffusers complement our existing line of high and ultra-high temperature/power Glasson-Glass Light Shaping Diffusers for customers that do not require those very high specifications of temperature, laser power and high UV transmission. As we broaden our customer base, we encounter requirements for additional or improved products. We are continually working on improving and expanding our product lines."*

## SemiLEDs Achieves 40% External Quantum Efficiency with Ultraviolet (UV) LED Chips

LIGHTimes News Staff

*February 21, 2012...SemiLEDs Corporation based in Hsinchu, Taiwan announced that its UV LED chips can achieved up to 40 percent external quantum efficiency emitting radiation at a wavelength of 390-420 nm. This efficiency was achieved at 350 mA with an output up to 500 mW using a typical 3.3V forward voltage.*

*"Our patented structure and metal alloy substrate allow us to produce and supply to the industrial curing market UV LEDs that are capable of operating at high current with high output power density," says Dr. Chuong Tran, COO and President of SemiLEDs. "We are proud to be able to advance the UV LED technology for the curing industry and to provide cost-effective solutions to our customers thanks to our proprietary MypLED technology."*

SemiLEDs UV LED products are available in wavelengths ranging from 365nm-420nm, in chip sizes of 1.07mm x 1.07mm and 0.3mm x 0.3mm, and are immediately available for sampling and order.

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### **Commentary & Perspective...**

## **LED Lighting will Change Everything**

Tom Griffiths - Publisher

February 23, 2012...Every technological revolution encompasses two distinct phases, and LED lighting is no exception. In the first phase, inventors work to adapt a new technology as some form of direct replacement for the incumbents while the second phase involves new applications that likely have never existed. LED lighting has started with standard street lights, ceiling troffers and replacement lamps (PARs and A-lamps), which is comparable to the first horseless carriages in the automobile evolution, or for the PC, networked systems in the accounting and materials departments. In that second phase, though, entirely new applications emerge, both for the technology itself, as well as in those areas it "suddenly" enables. When cars and trucks became capable of reliable travel at speeds above 50 MPH, highways came into being and the car was now a long distance travel tool. Some related 'apps' that followed were in-dash car radios (and the resulting music industry explosion), motels and fast-food. In the case of the 'networked PC and optical communications revolution', once we had arrived at high-speed networking and the thing called 'the internet', the E-commerce (and search engine) bonanza began, along with the whole mobile device and 'apps' revolution. In much the same way, LED lighting will revolutionize more in our lives than most people can imagine (and it shouldn't come as a big surprise that this will be a big focus at the [SSL Summit](#), April 3-4 in Long Beach).

**One key area will be related to better lighting for our interior and exterior environments.** The word "better", in this case, is intended to be broadly encompassing, including such things current talking points as better color rendering, better quality, better efficiency. Perhaps more important, though, what I'll call the "future betters", which would be such things as better for you (healthier), better utilized, more responsive to each of us as individuals, better for our overall productivity. LEDs, by their nature, are "designed" to produce light narrow wavelength ranges. Blue, red or green are produced at specific sets of blue, red or green wavelengths, depending upon the material properties of the semiconductors doing the work. What that implies is the we can "tune" the mix of wavelengths involved in doing

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depending upon the material properties of the semiconductors doing the work. What that implies is the we can "tune" the major wavelengths involved in doing whatever jobs is asked of them. In some cases, such as theatrical or movie stage lighting, it may be to enhance different tones to create a better balance or specific emotional effect. In other cases, we want to use those narrow LEDs wavelengths to "pump" the light out of a phosphor blend, which gives off a fairly broad spectrum of light. Whether tuned at the manufacturing or system level, the end result is that we're able to pretty much specify what mix of wavelengths we want to produce, which also means choosing wavelengths we want to experiment with.

The folks at RPI's Lighting Research Center (LRC) have done some interesting work recently in determining what appears as "white light" to people, and not unsurprisingly, they've discovered that it doesn't appear to precisely match the white-light curve that we've defined relative to incandescent light sources. RPI has also done work in uncovering how light affects our bodies, most notably in conjunction with melatonin, which affects circadian rhythm, seasonal affective disorders and jet lag. They're able to conduct this testing, large part, because LEDs have provided a tool to allow them to deliver specific frequencies and blends of light. I just recently heard about a new Alzheimer's care facility that is being built from the ground up specifically as an Alzheimer's facility. Attention will be paid to creating an environment that contributes to the patient's well being, including anything that is known to arrest the progress of that terrible disease. You know lighting is going to be a big part of the puzzle, and as we learn more and more about it, why shouldn't we expect that the correct ambient and "treatment" lighting will be able to add years to the "lucid time" that those afflicted have available to them. This just scratches the surface of what we're about to learn about light, and how to harness it to improve people's quality of life.

**The second key area will be in "smarter" lighting.** Again, it's an encompassing term that not only describes the amount of on-board intelligence, but speaks into how the photons are applied, and how they interact with the occupants of the space. In simplest terms, light will go from passive to "active". One big way will be to adjust the amount of lighting required based upon the combination of daylight, occupancy, productivity and availability. Sometimes that will be a balancing act, such as in the midst of a California heat wave when availability is poor, demand is high and brownouts are imminent. While we might like that outside wall conference room a little brighter, our actual productivity won't be affected in the meeting if the lights are low or even off. A meeting only illuminated by what's coming in the window is a lot more tolerable than having to recover work lost on our desktop PCs when the grid came crashing down... we'd 'get it' and wouldn't even grumble.

A big part of that will smart will be enabled by a whole new generation of sensors. Companies like [Redwood Systems](#) are fully focused on a sensor in every luminaire (fixture) to provide motion/occupancy as well as ambient light feedback. All that ties into the software (and more software, and more software) that assimilates the data and manages it according to the users' and facility operators' desires. Those lighting management systems will have all the hooks in them to tie into other aspects of the environment, including HVAC and security, so ultimately, the building will be one tightly managed system. And since the one "have to" that will operate with the finest granularity is lighting, it can be expected that those sensors in every luminaire will serve as the backbone for virtually all the sensing that needs to take place. In a recent visit to Redwood, as they provided a few live examples of the monitoring and response, it was easy to visualize that the response to a late-night intrusion alarm being the arriving police officers finding their path from the front door to the hiding "perp" being carefully illuminated, with the bad-guys' position being lit in a bright red (or black and white stripes, if you prefer). That's a lot better than walking into a dark building, trying to guess where the bad-guy may be, while hoping you can illuminate him (or her) with your Maglite before they manage to target you... Down come the insurance rates and we're all economically happier as well!

The goals for the LED lighting industry should be pretty straight forward. To help everyone the world over to live happier, healthier and more productive lives. That will combine the elements of optimizing energy use, lowering the cost per lumen, and increasing the usefulness of the lumens that are delivered, both relative to how they are delivered now, and towards the idea of nearly-perfect light every where we need it, and not where we don't. As folks like Derry Berrigan, Jeff Miller and Chip Israel have worked to teach us, working with something as elemental as light really is important to us all.

*If you have questions about the solid state lighting and compound semiconductor industries or have news or views to share, we want to hear from you! Feel free to contact us anytime.*

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