

Institute Unveils OLED that is 75% More Efficient

by Jason Lomborg, Technical Editor



Sponsored by  MICROCHIP



The Korea Advanced Institute of Science and Technology ([KAIST](#) [1]) has purportedly created an Organic Light Emitting Diode that is 75% more efficient than previous models. Led by Prof. Kyung-Cheol Choi, the KAIST team discovered a new type of surface plasmon enhanced OLED. KAIST explains their finding thusly: *“For surface plasmon localization, silver nanoparticles were thermally deposited in a high vacuum on cathode. Since plasmons provide a strong oscillator decay channel, time-resolved photoluminescence (PL) results displayed a 1.75-fold increased emission rate.”* In other words, the revamped OLED is 75% more efficient.

Most Popular on ECNMag.com:

- [China Bans Electro-Shock Therapy for Internet Addicts \[5\]](#)
- [Microsoft Responds to Google Actions With Free Office Programs \[6\]](#)
- [Scientists Save India's Moon Mission \[7\]](#)
- [GE Targets Net Zero Energy Homes by 2015 \[8\]](#)
- [Damage eyed as shuttle heads toward space station \[9\]](#)
- [Protect Your Pocket From Hackers \[10\]](#)
- [Scientists Discover Light Force with 'Push' Power \[11\]](#)
- [Latest iTunes Release Ejects Palm Pre Users \[12\]](#)
- [Low-Cost, High-Resolution Time-Measurement Application \[13\]](#)
- [Survey Reveals Contractors as Influencers for Adoption of LED Lighting \[14\]](#)

Institute Unveils OLED that is 75% More Efficient

Published on Electronic Component News (<http://www.ecnmag.com>)



A 3.8 cm (1.5 in) OLED Screen

OLEDs will always have one thing working against them: limited lifespan. The organic compounds that make up the emissive electroluminescent layer of the LED will degrade over time. HDTV Info Europe [notes](#) [2] that, *“OLED technology is in many ways a better technology than LCD technology, but the use of organic materials that degrade gives them a lifespan that's around 40% less than a standard LCD screen.”* Display Search analyzed Sony's XEL-1 OLED TV and [determined](#) [3] that, *“Lifetime for white at t50 is calculated to be 5,000 hours with initial luminance of 208 cd/m²,”* while, *“Lifetime for a video image is calculated to be 17,000 hours with initial luminance of 334 cd/m².”* They also noted that, *“There are well documented differential aging situations and after 1,000 hours of displaying a white image, the red luminance degraded by 7%, the green by 8% and the blue by 12%.”*

Advocates of OLED technology prefer to tout its strengths: larger selection of colors, brightness, contrast, and viewing angle (when compared to the typical LCD). OLEDs also have no need for a backlight, which makes them thinner than an LCD equivalent. Finally, OLEDs have a much faster response time than LCDs. LCDs clock in at around 2 ms, while OLED [has](#) [4] <0.01 ms response time. If

Institute Unveils OLED that is 75% More Efficient

Published on Electronic Component News (<http://www.ecnmag.com>)

we take these advantages into account, they nearly make up for OLED's major deficiency. The KAIST discovery is icing on the cake.

Higher efficiency equals lower power consumption. Lower power consumption equals lower electricity bills (how much lower is a matter of debate). This is the same argument made on behalf of nearly every new technology, especially those concerning energy. Will consumers make that initial investment? The best way to sell OLEDs to the public is to tout its aesthetic and technological superiority over what's currently offered. The general public won't care about its environmental benefits. This KAIST discovery is a great boon to OLED advocates.

Do you agree? Disagree? Think I've gone batty? Leave a comment below or e-mail me directly.

Note: The preceding represents the view of the editor and not necessarily ECN.

Source URL (retrieved on 04/25/2015 - 2:52am):

<http://www.ecnmag.com/blogs/2009/07/institute-unveils-oled-75-more-efficient>

Links:

- [1] <http://www.kaist.edu/edu.html>
- [2] <http://www.hdtvinfo.eu/news/hdtv-articles/oled-lifespan-doubled.html>
- [3] http://www.displaysearch.com/cps/rde/xbcr/SID-0A424DE8-739B3AAA/displaysearch/Sample_2008_OLED_Characterization_Sony_XEL-1.pdf
- [4] <http://www.samsungsdi.com/contents/en/product/oled/type01.html>
- [5] <http://www.ecnmag.com/news-china-bans-electroshock-for-internet-addiction-071409.aspx>
- [6] <http://www.ecnmag.com/news-Microsoft-Responds-to-Google-Actions-With-Free-Office-Programs-071309.aspx>
- [7] <http://www.ecnmag.com/news-Scientists-Save-India-Moon-Mission-071709.aspx>
- [8] <http://www.ecnmag.com/news-GE-Targets-Net-Zero-Energy-Homes-071709.aspx>
- [9] <http://www.ecnmag.com/news-damage-on-shuttle-071609.aspx>
- [10] <http://www.ecnmag.com/news-Protect-Your-Wallet-and-Passport-From-Hackers-071309.aspx>
- [11] <http://www.ecnmag.com/news-Light-Force-with-Push-Power-071609.aspx>

Institute Unveils OLED that is 75% More Efficient

Published on Electronic Component News (<http://www.ecnmag.com>)

[12] <http://www.ecnmag.com/article-itunes-ejects-pre-071609.aspx>

[13] <http://www.ecnmag.com/article-smh-low-cost-high-res-071609.aspx>

[14] http://www.ecnmag.com/article-survey_reveals-contractors-071309.aspx