

PRESS RELEASE

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Novaled develops highly power-efficient white PIN OLEDs with long lifetime and excellent light quality

Novaled, a leading technology and materials provider specializing in high-efficiency, long-lifetime organic light-emitting diodes (OLEDs) for display and lighting applications, today announced it has developed a highly power-efficient white OLED structure achieving 60 lm/W at a brightness of 1,000 cd/m² capable of reaching a very long lifetime of 100,000 hours at an initial brightness of 1,000 cd/m² while using commercially available fluorescent blue emitting material.

The high efficiency device also demonstrates a high color rendering index (CRI) of 87. A very broad light emission spectrum and good CIE color coordinates (0.470/0.429) were achieved, which is close to illuminant A and inside the US Department of Energy (DOE) quadrangles meeting the DOE energy star color specifications.

For this OLED stack Novaled intentionally used a classical and commercially available fluorescent blue emitter material. The OLED power efficiency with such materials is usually much less than with phosphorescent emitters, but due to the advantages of the Novaled PIN OLED[®] technology and proprietary materials a remarkably high value could be reached.

The use of the fluorescent blue emitter material has several advantages. Beside the fact that it is commercially available, it allows very good device stability and guarantees a higher lifetime of OLED devices. Also, it enables a broad coverage of the complete visible colour range, resulting in the very high colour rendering index value achieved by the OLED device.

The OLED sample incorporates Novaled light extraction technology and dedicated material NET 61 thereby enhancing the efficiency and improving the angular dependence of emitted light. By meeting the standards for commercial lighting applications, Novaled's new power-efficient white PIN OLEDs are already ideal for OLED lamps and luminaires for general and design lighting.

“Associating commercially available and robust fluorescent blue emitters with Novaled technology and materials leads to high OLED performances which meet major lighting market needs immediately”, says Gildas Sorin, CEO of Novaled AG. “Once phosphorescent blue emitter materials become real commercial products our technology will allow for a further boost in OLED device efficiencies showing the way to exceed above 100lm/w and long life time.”

Novaled's manufacturing uses standard processes to produce the white PIN OLED device structures. Standard glass substrates with ITO, ordinary evaporation processes and simple outcoupling methods allow for an easy adoption to existing manufacturing lines and for a cost efficient volume production of such devices.

About OLEDs

OLEDs (organic light-emitting diodes) are semiconductors made of thin organic material layers only a few hundred nanometers thick. They emit light in a diffuse way to form an area light source. In the fast-growing display market, OLEDs are a key part of the dream of paper-thin, highly efficient displays with brilliant colors and maximum design flexibility. OLEDs represent the future of a vast array of

completely new lighting applications. By combining color with shape, organic LEDs will create a new way of decorating and personalizing personal surroundings with light.

About Novaled

Novaled AG, a world leader in the Organic Light-Emitting Diode (OLED) field and organic electronics, specializes in high-efficiency, long-lifetime OLED structures. Major OLED producers throughout the world have partnered long-term with Novaled because of its PIN OLED[®] technology, proprietary OLED materials, and customized OLED products and services. With more than 400 OLED technology patents granted or pending, Novaled has been named #1 in a list of “up and coming” world market leaders by the German newspapers Handelsblatt and Wirtschaftswoche. It also has been awarded the prestigious highest level “5 star” rating for excellence – something very few companies achieve – by the independent European Foundation for Quality Management, EFQM. eCAPITAL, CréditAgricole Private Equity, TechnoStart, TechFund and CDC Innovation are major investors. For more information about Novaled please visit www.novaled.com.

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