EXALOS® SUCCESSFULLY TESTS LONG-LIFE GALLIUM NITRIDE SUPERLUMINESCENT LIGHT-EMITTING DIODES (SLEDs)

Leader in SLED Market Determines 5,000-Hour Lifetime for GaN-based Bright, Directional Beam Light Sources for Medical, Industrial, and Consumer Markets

PHOTONICS WEST, BOOTH #430, MOSCONE CENTER

ZURICH/Schlieren, SWITZERLAND – EXALOS®, the leader in the design, development and manufacture of advanced semiconductor light source solutions, today announced that it has successfully tested long-life gallium nitride (GaN) superluminescent light-emitting diodes (SLEDs) that deliver, under specific test conditions, an estimated lifetime of more than 5,000 hours. The EXALOS results demonstrate that SLEDs can deliver much more reliable light sources for devices, suggesting that, for example, markets such as direct retina display, 3D printing, or pico projectors, might benefit from reliable, long-life semiconductors that generate extreme brightness.

EXALOS will introduce the findings at the Photonic West conference in San Francisco, at the Moscone Center North & South, which runs from today through Thursday, February 18th. The company will demonstrate its SLED products at Booth #430 at the Photonics West exhibition.

EXALOS tested the reliability of GaN-based SLEDs emitting at a wavelength of 405 nanometers (nm), demonstrating that optimized doping levels provide decreased operating voltage on single-mode devices from more than 6 volts to less than 5 volts for an injection current of 100 mA. The tests showed that magnesium (Mg) doping levels in the p-type (positive) layers have an impact on both the device electro-optical characteristics and their reliability. SLED modules with standard and optimized p-type layers were tested in lifetime output.

Modules with standard and optimized p-type layers were finally tested in terms of lifetime, at a constant output power of 10 milliwatts (mW), in continuous wave (cw) operation and at a case temperature of 25 °C. The modules with non-optimized p-type doping showed a fast and remarkable increase in the drive current during the first hundreds of hours together with an increase of the device series resistance. No degradation of the electrical characteristics was observed after 2,000 hours on devices with optimized p-type layers. Under the specific test conditions, the estimated lifetime for those devices was higher than 5,000 hours. Furthermore, maximum output powers as high as 350 mW (for an injection current of 500 mA) have been achieved in continuous-wave operation (cw) at room temperature.

“We have seen, in recent years, tremendous improvement in the performance and reliability of GaN-based laser diodes in the 405 nanometer wavelength, which have been successfully commercialized in markets including medical and industrial applications, as well as laser projection and automotive head lamp design,” said Dr. Christian Velez, CEO of EXALOS. “Our tests now show that the GaN-based SLEDs can deliver high output power with ideal directional beams with higher power levels for applications such as direct retina projection and pico projection. This is what we believe new markets are seeking for light sources.”
EXALOS, which developed the industry’s first blue SLED, has shipped since 2003 more than 300,000 SLEDs in the wavelength range from 405 nm to 1600 nm. The company is the leading supplier to the SLED-based current sensor market and to the fiber-optic gyroscope market for both space and land-based applications. EXALOS has also been a leading SLED supplier to the Optical Coherence Tomography (OCT) market since the commercialization of SLED technology.

In addition to Velez, the EXALOS paper was authored by Antonino Castiglia; Marco Rossetti; Nicolai Matuschek; Raffaele Rezzonico; Marcus Duelk, Jean-François Carlin, and Nicolas Grandjean.

ABOUT EXALOS

Founded in 2003, and based in Zurich, Switzerland, EXALOS is a privately-held company that designs, develops, manufactures, and sells advanced light source solutions based on Superluminescent Light-Emitting Diodes (SLEDs) and External Cavity Tunable Lasers (Swept Sources). In addition, the EXALOS product portfolio includes driver electronics, Optical Coherence Tomography (OCT) engines, and balanced receivers. Its products are used extensively in medical, industrial, navigation, optical sensing, metrology, military, imaging, and scientific applications. EXALOS has been ISO 9001:2008 certified since 2004. For more information, visit the company website at www.exalos.com

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EDITOR’S NOTE: If you would like a color photograph of Dr. Christian Velez, CEO of EXALOS, or product shots of EXALOS solutions, please contact Chris Pfaff on chris@chrispfafftechmedia.com or +1-201-218-0262