

Press Presse

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“UV Power” research project is working on LED-replacements for conventional UV light sources

The project, which is being coordinated by Osram Opto Semiconductors, aims to develop new technology for high-power mass-market UV LEDs

Since February 2017, a total of five research institutes and companies have been working on “UV Power”, a collaborative project funded by the German Federal Ministry of Education and Research (BMBF). The partners have made it their goal to provide high-power UV LEDs to cover a wide variety of applications. These LEDs will eventually replace conventional UV light sources, which often contain toxic mercury, in areas such as production, disinfection, the environment, life sciences and medicine. UV LEDs are also likely to open up new areas of application.

As part of “Advanced UV for Life”, a consortium of research institutes and companies which is being funded under the federal “Zwanzig20” program, Osram Opto Semiconductors is working with four partners on high-power UV LEDs for the mass market: the Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH), the Technical University of Berlin, LayTec AG and UVphototonics NT GmbH. Prototype LEDs and the technology for producing high-power LEDs for the UVB and UVC spectrums on the basis of the aluminum gallium nitride (AlGaIn) material system are scheduled to be presented by 2020.

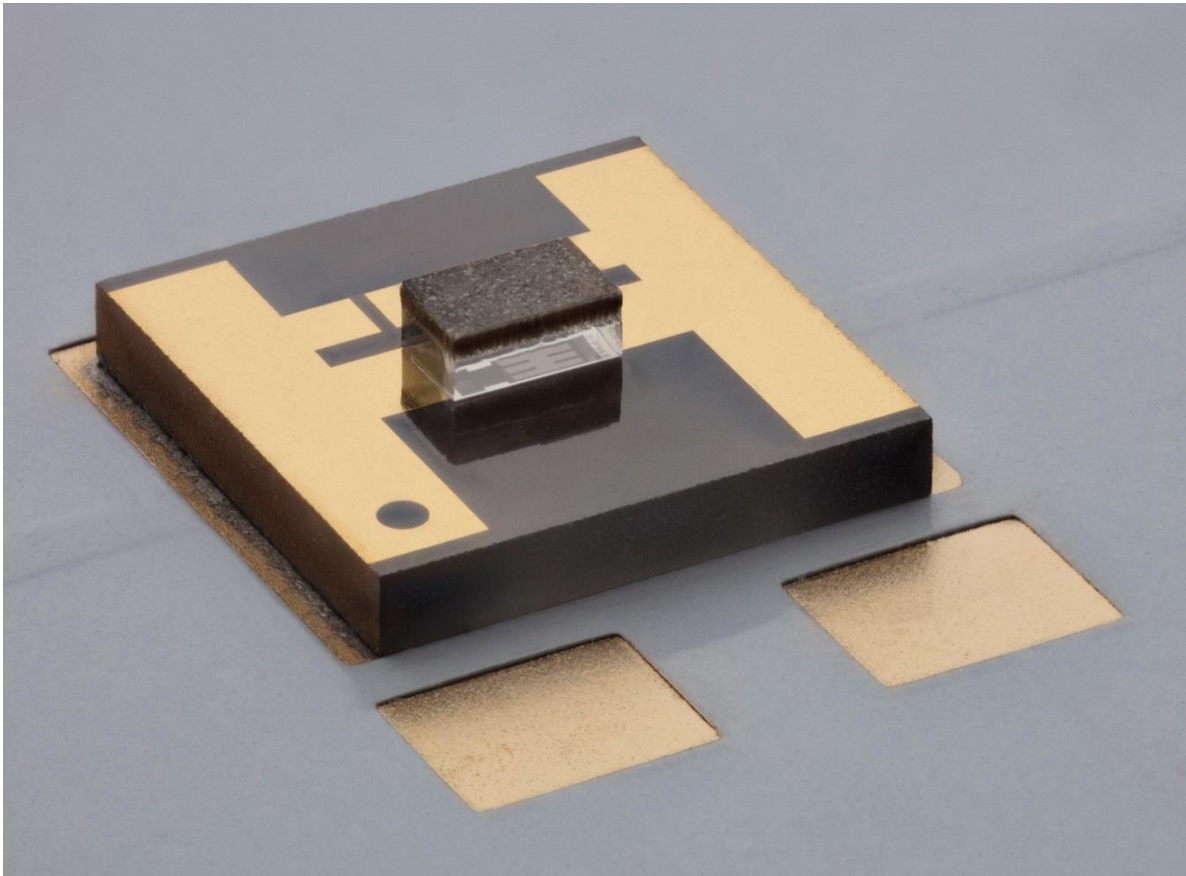
The partners are therefore pooling their scientific know-how and making their highly specialized technical facilities and analysis methods available. Development of the high-power LEDs is taking place along the entire technology chain for LED production. “The various tasks have been distributed among the partners on the basis of their strengths – everything from the production of structured sapphire substrates, epitaxy and chip processing to packaging and analytics”, said Dr. Hans-Jürgen Lugauer, Head of UV Development at Osram Opto Semiconductors. “With our presence on the international

market and our expertise in industrial manufacturing we are boosting the impact of the consortium considerably,” he added.

To speed up development and make efficient use of resources, the partners are splitting their work into different wavelength ranges. In addition to coordinating the entire project, Osram Opto Semiconductors is taking on the wavelength range of 270 to 290 nm. In epitaxy, the Ferdinand-Braun-Institut is covering the adjacent wavelengths in the UVB range between 290 and 310 nm and processing the epitaxial wafers into UV chips. The Technical University of Berlin is focusing on the wavelength range of 250 to 270 nm, applying its expertise in material analysis for AlGaIn materials and AlGaIn LEDs. TU Berlin also has extensive specialized equipment for UV analysis. LayTec AG is developing tailor-made techniques for controlling the epitaxy and plasma etching systems. FBH spin-off UVphotonics NT GmbH is the interface to users. It is responsible for optimizing the chip design, for achieving high currents and for efficient cooling. The company is also handling the statistical collection and analysis of process data from the entire production chain and making this data available to the project partners for optimizing the production process. The important subjects of assembly technology and the effects of aging will be investigated by FBH, TUB and UVphotonics in further projects as part of the consortium.

The optical outputs of the new LEDs are expected to be greater than 120 mW at 300 ± 10 nm, 140 mW at 280 ± 10 nm and 80 mW at 260 ± 10 nm. The research group is also working on making significant improvements to the aging behavior of the LEDs so they can be operated longer and more economically.

For more information on Advanced UV for Life click [here](#)



UV-LED in flip-chip geometry mounted on an AlN submount.

Picture: FBH/schurian.com

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