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# Silanna UV Makes Ultraviolet LED Manufacturing Breakthrough With Nanostructures

## *Easy wavelength tuning, higher power at short wavelengths, and exceptional lifetime performance*

**Brisbane, Australia, 15 September, 2022 *-*** A major breakthrough in [UV-C LED technology](https://silannauv.com/an-introduction-to-uv-c-leds/%22%20%5Ct%20%22_blank) from Silanna UV offers huge advantages for applications as diverse as disinfection, water quality monitoring, gas sensing, liquid chromatography, and chemical and biological analysis. The new manufacturing approach promises to make deep ultraviolet and far ultraviolet LEDs easier to make, more efficient at shorter wavelengths, and more reliable. With the renewed focus on air, water and surface disinfection following the Covid-19 pandemic, these next-generation UV LEDs are already attracting interest.

Silanna UV’s groundbreaking patented [short period superlattice (SPSL) approach](https://silannauv.com/silanna-core-technology-1-short-period-superlattice-technology/%22%20%5Ct%20%22_blank) overcomes many of the difficulties that plague competing AlGaN UV-C LED technologies. In essence, Silanna UV has effectively created a new material, a nanostructure, which is much easier to control and has properties that are far superior to traditional AlGaN. The benefits for UV-C LED quality are revolutionary.

### Moving beyond traditional UV LEDs

For years, UV-C LED manufacturers have relied on traditional AlGaN Aluminum Gallium Nitride alloy) formulas. In theory, by adjusting the ratio of aluminum and gallium metal in the alloy lattice, the bandgap can be tuned to produce UV emissions from 340 nm to 210 nm, covering most of the UV spectrum. But in reality, emission below 260nm require high Al-content AlGaN, which, unlike GaN, makes it very difficult to achieve desirable n and p-type doping, particularly at the shortest wavelengths, leading to poor electrical performance. High-Al content AlGaN also suffers from light extraction issues due to the polarization of emitted light, causing significant loss of light output, particularly in the far UV range below 240nm.

### Silanna UV’s breakthrough SPSL material

To overcome these problems in UV LEDs, Silanna UV uses new technology. Instead of the common AlGaN method, Silanna UV uses SPSL.

In this approach, rather than using a crude old-fashioned ternary alloy, alternating layers of AlN and GaN (as many as several hundred layers) are meticulously built up to create a so-called SPSL. Unlike a traditional ternary alloy, this SPSL’s key properties – including bandgap and conductivity – can be finely tuned by simply adjusting the thickness of the constituent layers. This means that the issues caused by High-Al content AlGaN are mitigated – in particular, that older method’s poor electrical characteristics and short wavelength light-loss.

The SPSL technology gives Silanna UV huge advantages over UV-C LED competitors, including the maintenance of high power at shorter wavelengths, superior electrical properties, and outstanding lifetime performance.

For more information on Silanna UV’s technology and UV-C LED products can contact the Sales Team at sales\_uv@silanna.com.

### About Silanna UV

The Silanna Group is an Australian semiconductor manufacturer established in 2006. Privately funded since being acquired from Peregrine Semiconductor in 2008, Silanna UV is an ISO 9001:2015 certified solution provider for UV-C LED manufacturing. Based in Brisbane, Australia, Silanna UV provides far UV-C light sources for water quality sensors, gas sensors, disinfection, and HPLC (High-performance liquid chromatography) applications. Silanna UV’s innovative approach allows UV LED technology to push toward shorter wavelengths, from 230nm to 265nm, including deep UV-C and far UV-C ranges. The company holds unique epitaxy technology and holds patents related to UV LED technology. With its unique UV LED technology, Silanna UV strives to create new possibilities by pushing UV wavelength boundaries to the limit. To learn more, please visit [http://www.silannauv.com/](http://www.silannauv.com/%22%20%5Ct%20%22_blank).