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BluGlass expands GaN laser roadmap into surface-emitting laser markets

Highlights

- BluGlass is expanding its GaN laser product roadmap into surface-emitting lasers, targeting initial opportunities in aerospace and defence, quantum and precision sensing, LiDAR and free-space optical systems, with longer-term potential in AR/VR displays, spatial computing, consumer sensing and data centre optical interconnects.
- BluGlass intends to extend its established GaN laser capabilities into surface-emitting form factors, which may enable compact two-dimensional arrays and advanced integration with free-space optics and photonic integrated circuits.
- BluGlass has recently filed a provisional patent application that covers a new Bi-Photonic Crystal GaN photonic-crystal surface-emitting laser (**PCSEL**) architecture to provide greater design flexibility for laser mode control and surface-emitted optical output.

Global supplier of gallium nitride (GaN) laser technology, BluGlass Limited (ASX: BLG, "**BluGlass**" or "**Company**") today announced it is expanding its GaN laser product roadmap into surface-emitting lasers, adding a potential new product platform that complements its established edge-emitting laser business. It extends the Company's existing roadmap into a new form factor, consistent with its established strategy. The initiative builds on BluGlass' expertise in epitaxy, device design, fabrication and optical mode control, together with recent laser designs, including a newly filed provisional patent application for a GaN-based photonic-crystal surface-emitting laser ("**PCSEL**") platform.

PCSELs use photonic-crystal structures to control optical modes and emit light perpendicular to the semiconductor surface. BluGlass is evaluating how this surface-emitting profile could extend its GaN laser roadmap into applications benefiting from compact packaging, wafer-scale and two-dimensional arrays, high beam quality and spectral control, vertical optical coupling, the potential for scalable coherent output, and simplified integration with free-space optics, sensors, micro-optics and photonic integrated circuits.

BluGlass has recently filed a provisional patent application, titled "**Bi-Photonic Crystal Multi-Junction Gallium Nitride Surface-Emitting Lasers, Structures, Methods of Fabrication and Operation, and Individually Addressable Optical Interconnect Arrays**" that covers photonic-crystal structures that provide design flexibility for optical-mode control, surface emission, beam characteristics and power scalability. The application also covers embodiments incorporating multiple active regions, enabled by tunnel-junctions and fabrication approaches designed to provide ease of manufacture of the photonic-crystal structure. The application further extends the architecture to arrays of individually addressable surface-emitting lasers, supporting potential future optical interconnects, beam-forming and high-brightness free-space systems.

Priority market opportunities

BluGlass will initially target opportunities in aerospace and defence, quantum and precision sensing, biomedical and scientific instrumentation, industrial metrology, LiDAR and free-space optical systems, where compact, narrow-linewidth, high-beam-quality and high-brightness sources can offer integration advantages. Longer-term opportunities include display, spatial computing, mobile 3D sensing and optical interconnects, where surface emission and individually addressable two-dimensional arrays may enable more compact and integrated photonic systems.

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BluGlass CEO Jim Haden said, "BluGlass is expanding our GaN laser roadmap into surface-emitting devices as a potential new product platform, building on our capabilities in epitaxy, device engineering, fabrication and optical mode control. Surface emission can enable two-dimensional arrays and more direct integration with micro-optics and photonic systems, while our recent filing provides additional design flexibility to pursue compact narrow-linewidth, high-brightness devices and individually addressable arrays. This creates a pathway to pursue new customer and market opportunities while leveraging BluGlass' existing GaN laser capabilities. This is a strategic add-on that builds on our core business and gives us a new competitive advantage."

The initiative broadens BluGlass' technology roadmap beyond its established edge-emitting GaN lasers and supports engagement with prospective customers and development partners in markets requiring high optical brightness, narrow-linewidth operation, high beam quality, advanced sensing, compact optical integration, and next-generation connectivity. Development priorities and commercial pathways will be assessed against customer requirements, manufacturability, and alignment with the Company's product roadmap.

This announcement has been approved for release by the Board of BluGlass.

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About BluGlass

BluGlass Limited (ASX: BLG) is a leading supplier of GaN laser diode products to the global photonics industry, focused on the industrial, defence, biomedical and scientific markets.

Listed on the ASX, BluGlass is one of just a handful of end-to-end GaN laser manufacturers globally. Its operations in Australia and the USA offer cutting-edge, custom laser diode development and manufacturing, from small-batch custom lasers to medium and high-volume off-the-shelf products.

The Company combines its proprietary low temperature, low hydrogen, remote plasma chemical vapour deposition (RPCVD) manufacturing process with advanced device design and fabrication to deliver differentiated laser solutions. With end-to-end capabilities spanning epitaxy, device design, fabrication, and testing, BluGlass is well-positioned to support critical next-generation photonics applications and sovereign supply chains.