2 October 2024

BluGlass and Macquarie University partner in ocean temperature mapping LiDAR project

Highlights

- BluGlass is partnering with Macquarie University as part of an *Australia's Economic Accelerator* project
  - The 12-month blue ocean LiDAR (Light Detection and Ranging) project will lead to a new laser-based method to measure subsurface water temperature and depth
  - BluGlass will deliver visible gallium nitride (GaN) lasers, using underwater wavelengths of blue and aqua-marine
- Project aligns with BluGlass' target applications and development collaborations such as the CLAWS Hub as part of the US Department of Defense's Microelectronics Commons program for defence and dual use technologies

Global semiconductor developer **BluGlass Limited** (**ASX: BLG**) has signed an agreement with Macquarie University (project lead) and defence company Aurizn to develop and test a new laser-based method to measure subsurface water temperature and depth. BluGlass will provide visible gallium nitride (GaN) lasers to the project, partially funded by an *Australia's Economic Accelerator (AEA) Seed Grant*[1] to support the commercialisation of visible lasers in maritime applications.

The project will develop and run commercial trials of fully-functional blue ocean LiDAR (Light Detection and Ranging) technology to improve maritime situational awareness in defence and environmental settings where satellites and marine buoys are currently used. Blue ocean LiDAR will improve detection of underwater objects, provide increased accuracy in predicting coral bleaching events, and refinement of climate modelling technology.

While invisible infrared (IR) lasers have gained mass adoption in fibre-optic and space communications, they are ineffective in sub-marine applications, as their wavelengths are almost entirely absorbed by water. Underwater laser communication and remote sensing require visible lasers in shorter wavelengths, typically between violet and green.

BluGlass will provide high-power multi-transverse-mode devices for the ocean LiDAR, targeting useable underwater wavelengths in the blue and aqua-marine ranges. The project will harness the advantages visible GaN lasers have over current lower-power and solid-state lasers, such as compact size, high power conversion efficiency, low manufacturing cost, wavelength tunability, beam divergence control, lifetime, and ability to shift wavelength rapidly.

Professor Sakkie Pretorius, Deputy Vice-Chancellor (Research) at Macquarie University said "This collaborative project with BluGlass and Aurizn perfectly aligns with Macquarie University's world-class expertise in laser technology. In developing blue ocean LiDAR technology, we're helping create solutions that address real-world challenges, from improving maritime defence to enhancing our understanding of coral reef health and climate change."

Jim Haden, BluGlass CEO, said, "As one of only a few GaN laser manufacturers globally, BluGlass is pleased to partner with Macquarie University and defence company Aurizn to co-develop next-generation LiDAR technology for subsea defence and civil applications. The project leverages each partner's unique development and

commercial strengths to combine leading-edge photonic and detector technologies in novel applications with significant market potential. We are excited to see our BluGlass GaN lasers deployed in underwater environments for field testing and validation".

Project lead, Dr Ondrej Kitzler, a Research Fellow in the MQ Photonics Research Centre at Macquarie University said, "Invisible infrared lasers are widely used in terrestrial remote sensing and communications, but their wavelengths are largely absorbed by water. To use lasers for remote sensing and communicating underwater, visible lasers at shorter wavelengths between the violet and green spectrum are needed. The unique semiconductor lasers developed by BluGlass operate between 420 to 520 nanometres, making them ideal for these demanding applications," Dr Kitzler says.

Aurizn's Chief Scientist, Dr Peter Amerl, added: "This project builds on the development of remote electro-optical sensing systems that Aurizn has spearheaded in partnership with Defence. We look forward to applying our expertise to help guide the project to ensure suitable outcomes for both Defence and National Security use".

While BluGlass' revenue from the partnership is immaterial, the project has significant technological and commercial potential. Following successful completion of the project, the parties intend to enter formal negotiations to progress the blue ocean LiDAR prototype to commercialisation, production, and manufacturing.

The project aligns with the Company's target markets and technology development roadmaps, including development collaborations the Company is working on with UC Santa Barbara as well as the CLAWS Hub led by North Carolina State University (NCSU), as part of the Microelectronics Commons program for defence and dual use technologies run by the US Department of Defence.

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

1. *Australia's Economic Accelerator* (AEA) Seed Grant of AUD $182K

For more information, please contact: Stefanie Winwood | +61 2 9334 2300 | swinwood@bluglass.com

BluGlass Limited (ASX:BLG) is a leading supplier of GaN laser diode products to the global photonics industry, focused on the industrial, defence, bio-medical, 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 US offer cutting-edge, custom laser diode development and manufacturing, from small-batch custom lasers to medium and high-volume off-the-shelf products.

Its proprietary low temperature, low hydrogen, remote plasma chemical vapour deposition (RPCVD) manufacturing technology and novel device architectures are internationally recognised, and provide the potential to create brighter, better performing lasers to power the devices of tomorrow.