

IQE plc

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IQE and Quintessent partner on Quantum Dot for AI

- Partners establish commercial quantum dot epitaxial wafer supply chain for AI optical interconnects

IQE plc (AIM: IQE, "IQE" or the "Group"), the leading global supplier of compound semiconductor wafer products and advanced material solutions, has strengthened its partnership with Quintessent Inc., a pioneer in quantum dot laser technology and heterogeneous silicon photonics, to establish the world's first large-scale quantum dot laser ("QDL") and semiconductor optical amplifier (SOA) epitaxial wafer supply chain. This milestone is backed by an initial purchase order of 0.5m for delivery of production wafers to Quintessent through 2025.

The rapid expansion of AI-driven applications has placed significant requirement in data centres power consumption driving the migration from copper chip to chip connectivity to Silicon Photonics. This has created an increasing demand for high-bandwidth, low-latency, energy-efficient and highly reliable optical interconnects. Traditional laser technologies struggle to meet these requirements, making QDLs and SOAs a critical innovation for future AI infrastructure which offer superior performance, including extended lifetimes, improved efficiency, lower noise and greater resilience to environmental fluctuations.

IQE and Quintessent have collaborated for over a decade to transition QDL technology from research to large-scale production. Building on research breakthroughs from John Bower's laboratory at the University of California, Santa Barbara, the partnership has successfully developed highly optimised and high performing gain GaAs-based quantum dot epitaxial wafers on 6-inch substrates versus state of the art 4-inch art indium phosphide lasers. This achievement enables the production of hundreds of millions of high-performance edge-emitting lasers annually.

Jutta Meier, Interim CEO and Chief Financial Officer of IQE, commented:

"IQE is proud to strengthen our long-standing partnership with Quintessent, driving the commercialisation of QDL technology. This commitment highlights our expertise in high-volume epitaxial wafer manufacturing and our proven ability to scale innovative semiconductor solutions into production. Our collaboration, spanning commercial products and DoD programs has delivered QDL wafers with exceptional reproducibility and lasing performance"

Alan Liu, CEO and co-founder, Quintessent, commented:

"The performance, cost, and reliability advantages that quantum dot-based lasers and amplifiers enable over their quantum well counterparts are exactly what our customers are demanding to address the soaring need for optical connectivity in AI driven compute. Through our partnership with IQE, we have brought this transformative technology to scale, positioning us to be the leader in delivering solutions leveraging quantum dot laser and SOA technology."

With this partnership, IQE continues to set the industry benchmark for cutting-edge epitaxy solutions, further positioning itself as a key enabler of next-generation AI and optical computing technologies.

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ABOUT IQE

<http://iqep.com>

IQE is the leading global supplier of advanced compound semiconductor wafers and materials solutions that enable a diverse range of applications across:

- Smart Connected Devices
- Communications Infrastructure
- Automotive and Industrial
- Aerospace and Security

As a scaled global epitaxy wafer manufacturer, IQE is uniquely positioned in this market which has high barriers to entry. IQE supplies the global market and is enabling customers to innovate at chip and OEM level. By leveraging the Group's intellectual property portfolio including know-how and patents, it produces epitaxy wafers of superior quality, yield and unit economics.

IQE is headquartered in Cardiff UK, with employees across manufacturing locations in the UK, US and Taiwan, and is listed on the AIM Stock Exchange in London.

About Quintessent Inc.:

<http://quintessent.com>

Quintessent is solving the foundational bottlenecks limiting the scalability and reliability of optical connectivity required by next-generation AI and computing infrastructure. Leveraging multiple innovations that span high-performance quantum dot materials, photonic integrated circuit design, and system-optimized link architecture, Quintessent's technology slashes power consumption and packaging complexity while achieving multiplicative increases in both bandwidth density and reliability - unlocking the massive scaling needed for future AI applications.

Quintessent is headquartered in Santa Barbara, California.

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