

**A response to “[Under the microscope](#)” Parliamentary Inquiry,
18th of March 2025**

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About CORNERSTONE Photonics Innovation Centre:

The CORNERSTONE Photonics Innovation Centre is a world leading, open access foundry that manufactures photonic semiconductors (chips), with applications in quantum, defence, AI and future telecoms. We provide expert design consultancy, and supply prototype photonic chips to industry and academia in over 24 countries.

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What do you want the committee to put under the microscope?

The committee should put **silicon photonics** under the microscope to explore its potential to deliver economic growth and resilience across multiple sectors, from defence to healthcare, AI and future telecoms.

Photonics is the technology of light, and silicon photonics is the technology of light on tiny silicon chips, akin to electronics chips that power all electronics devices. While the UK is dependent on overseas suppliers for electronic chips, this is not the case for photonic chips.

The future of the UK’s critical technologies is increasingly reliant on silicon photonics:

- Silicon photonics processes and transmits data efficiently and at high speed, which is essential for future telecoms, data centres and AI.
- Silicon photonics supports imaging and sensing, with applications in healthcare, environmental monitoring and defence.
- Silicon photonics is the preferred platform for quantum technologies due to photonic isolation and room temperature operation that builds on technology developed for telecoms. Silicon photonic chips can be manufactured at huge scale and at very low cost.
- And more

The commercialisation of silicon photonics has already proved successful in data centres. However, its potential extends far beyond.

Why does it matter to you?

Many near market applications of silicon photonics do not yet have dominant global players, presenting an opportunity for the UK to take a leadership position, particularly in innovation and prototyping. The UK is home to one of the pioneering research groups in silicon photonics having been active in the field since 1989, and with a plethora of high impact research groups active in the area spanning all 4 UK nations.

The economic impact of the photonics sector in the UK is substantial, contributing £15.2 billion annually and supporting over 79,100 direct jobs [1]. Silicon Photonics is one of the most rapidly growing sectors of photonics offering significant growth potential to the UK.

What you think the government should do about it?

The UK has a great chance to strengthen its leadership in silicon photonics. However, to do this, the UK should invest in special facilities called **pilot lines**.

A pilot line is like a small factory designed to integrate innovative technologies to help new technology move from the research stage to create actual products that end-users can evaluate, test and sell.

Early adopters of silicon photonics, such as the UK's space and defence companies, are seeking to trial new prototypes, but will struggle without appropriate pilot line facilities.

The UK is well positioned to develop pilot line facilities, building on existing prototyping expertise at the Universities of Glasgow and Southampton (CORNERSTONE), a plethora of innovative start-ups (e.g. Finchetto, Optalysys, Saliency Labs, Wave Photonics, Zero Point Motion), high impact research groups (e.g. Bristol, Cambridge, Glasgow, Manchester, Southampton, UCL, York), and larger companies seeking innovative products, including BT, Leonardo, Qinetiq, Renishaw, Seagate and Toshiba.

[1] UK Photonics 2023, The Hidden Economic Engine (2023) Available from:

https://photonicsuk.org/wpcontent/uploads/2023/06/UK_Photonics_2023_Hidden_Economic_Engine.pdf