



Photronics21 Press Release

# US photonics industry thriving as R&D hits \$792 billion

**New report reveals how a record-breaking \$792 billion in R&D funding is driving growth in photonics, supporting technological advances across business and defence applications.**

- **New study from TEMATYS reveals that R&D funding in the States reached a record high of \$792 billion in 2021 – three quarters of which (\$588 billion) now comes from the private sector.**
- **Photonics funding from federal and regional grants alone, excluding private-sector investment, has grown to an estimated \$1.7 billion in 2023, enabling the US photonics industry to thrive.**
- **Federal agencies like the Department of Defense (DoD), Department of Energy (DoE), and the National Science Foundation (NSF) have provided substantial grants for photonics research since the pandemic.**
- **Report shows DARPA spends \$168.7 million per year on photonics research to develop advanced military applications.**

A new report published by Europe's premier photonics technology platform, [Photronics21](#), reveals how light technologies are thriving in the US with substantial R&D spending despite global competition from Europe and China.

Called "*Analysis of US grants for R&D Photonics funding*", the new study shows the amount spent on R&D in North America reached record highs of over \$792 billion in 2021 – a \$75 billion increase from the \$717 billion awarded in 2020. The majority of this funding is driven by private companies (\$588 billion), reflecting a strong trend towards market-oriented research.

The report highlights the combined federal and regional grants specifically for light technologies, which were worth \$1.4 billion in 2022, have now grown to \$1.7 billion in 2023.

Photonics, or the science of generating and harnessing light, is a fundamental technology which supports and enables quantum, 5G, AI, IoT, biotechnology, aerospace, intelligent manufacturing, and life sciences and is crucial for applications in displays, lasers, lighting, ICT, and photovoltaics.

According to the research, which was devised by the French market intelligence group Tematys, R&D spending accounts for 3.4% of the U.S. Gross Domestic Product (GDP) — a figure that far exceeds the Organisation for Economic Co-operation and Development (OECD) average of 2.7%.

Photronics21 President Dr. Lutz Aschke said: "Sustained R&D funding is having an incredible impact on the US photonics industry. This substantial federal and regional support, as well as the significant funding from companies, is enabling these critical technologies to drive major scientific advancements. This funding is accelerating innovation within the global photonics sector."



“In the past, Europe held a leading global position, with a market share that placed us ahead of North America. However, that lead is now at risk. To maintain and strengthen Europe’s leadership in this critical field—and to prevent further erosion of our strategic position—we must significantly increase our funding and support for photonics R&D to ensure we remain competitive on the global stage. Without this intensified focus, Europe risks falling behind in technology essential to our future.”

### **Record Investment in Photonics for Military Applications**

The report reveals that funding for military applications using photonics in the US has seen substantial growth. DARPA has significantly ramped up its investment in photonics, with funding in this sector growing from \$72 million in 2021 to \$168.7 million by 2023.

Key initiatives like the Lasers for Universal Microscale Optical Systems (LUMOS) have received \$62 million, and the Focal Arrays for Curved Infrared Imagers (FOCII) project has been allocated \$52 million.

Additionally, the study highlights significant investments that have been made in projects such as the Generating RF with Photonic Oscillators for Low Noise (GRYPHON) project to develop compact, low-noise microwave frequency oscillators for advanced sensing and communication.

### **Business-Driven Innovation**

The findings of the Tematys study suggest that the photonics sector is not only weathering the storm of global turmoil but is also poised for continued innovation and growth.

According to the report, businesses are heavily investing in photonics, with 74.2% of US R&D funding coming from private companies. Substantial support has been provided to small and medium-sized enterprises (SMEs) through programs like the Small Business Innovation Research (SBIR) initiative – a critical source of funding for many photonic enterprises in the States.

The majority of SBIR funding (92%) comes from five major agencies: the Department of Defense (DoD), Department of Energy (DoE), Department of Health and Human Services (DHH), NASA, and the National Science Foundation (NSF).

Among these agencies, NASA and the DoE stand out, with over 15% of their SBIR budgets dedicated to photonics projects, highlighting their strong support for innovation in this field. The DoD, which provides 53% of all SBIR funding, maintains average photonics funding levels at around 10%.