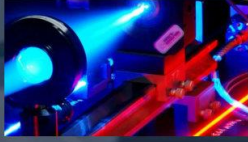


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Sweden's optical science & photonics infrastructure

Strategic technology area: With more than 200 active photonics companies and all major universities engaged in research and education, Sweden is a strong hub for photonics. Together with PhotonicSweden, we've highlighted some of the key aspects of this critical part of Sweden's semiconductor edge.

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<https://semiconsweden.com/swedens-optical-science-photonics-infrastructure/>

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Sweden's photonics industry:

- **Companies:** 200+ active photonics companies
- **Employment:** 8,000+ professionals in photonics
- **Annual turnover:** €2–3 billion
- **Broad impact:** ~8,000 companies relying on photonics, 260,000 jobs, €90 billion turnover
- **Academic recognition:** 20+ Nobel Prizes connected to photonics in 25 years; Anne L'Huillier (Lund University) awarded Nobel Prize in Physics 2023
- **National platform:** PhotonicSweden, established 2011, linking 50+ member organizations and 120+ personal members
- **Strategic role:** DeepTech technology underpinning quantum, 5G/6G, energy efficiency, advanced manufacturing, and semiconductors

Key institutions:

Sweden's universities are leaders in photonics research, combining academia with industrial links:

- **KTH (Royal Institute of Technology):** Research in biophotonics, quantum photonics, laser physics, and photonic chips.
- **Lund University:** Active in optics, lasers, and nanophotonics; hosts Lund Laser Centre and NanoLund.

Mapping photonics & the optical science in Sweden

Photonics i.e. the science and technology of light – is recognized globally as a Key Enabling Technology (KET) and a critical DeepTech field. Every message you send, every video you stream, and every search you make relies on photons. Fiber cables cross oceans, radio waves connect your phone to antennas, and optical systems keep the internet running. Society is built on photonics – without it, communication would stop. Photonics also drives innovation in areas like quantum technology, 5G/6G, energy efficiency, and advanced manufacturing. In Sweden, photonics is often hidden inside larger systems but is essential for breakthroughs across industries.

Academic excellence and research leadership

Sweden's universities and research institutes (including RISE AB and SWERIM AB) have strong expertise in photonics. A recent milestone was reached in 2023 when Professor Anne L'Huillier of Lund University received the Nobel Prize in Physics for her pioneering work on attosecond pulses of light. Swedish researchers in photonics have been connected to more than 20 Nobel Prizes in the past 25 years, underscoring leadership in ultrafast optics and beyond.



Professor Anne L'Huillier (middle) with Dr Lennart B.M. Svensson and Petra Bindig from PhotonicSweden.

- **Chalmers University of Technology:** Works on quantum photonics, optical communications (FORCE center), and industrial spin-offs.
- **Luleå University of Technology:** Specializes in laser manufacturing, sensing, and bioenergy applications.
- **Umeå University:** Research in organic electronics, photonics, and optical physics.
- **Mid Sweden University:** Focuses on materials research and detector technologies.
- **Uppsala University:** Applies photonics in biomedicine, electronics, and sustainable energy.
- **Stockholm University:** Quantum Photonics Group researching light for secure communication and sensing.

Sweden's industrial strengths: A hidden economic impact

Photonics may not always be visible in end products, but its impact is large. Sweden hosts 200+ companies, employing over 8,000 professionals, with a turnover of €2–3 billion annually. This includes a strong supplier network that provides vital photonics components, measurement systems, and optical materials to both research institutions and industry. Key examples include:

- **Hamamatsu** – A global supplier of advanced photonic components and imaging sensors used in science and industry.
- **Thorlabs** – Provides research and industrial equipment for optical and photonics applications, with a strong presence across Europe.
- **Edmund Optics** – Specializes in optical components and imaging solutions serving R&D and manufacturing.
- **Tillquist** – Supplies photonics and measurement technology to Nordic industries and research organizations.
- **Proximion** – Develops fiber-optic components and monitoring systems, with production based in Sweden.

These suppliers form an essential link between Sweden's photonics research and industrial innovation, ensuring local access to world-class components and equipment.

A national platform to advocate for photonics in Sweden

PhotonicSweden (PS) was established in 2011 as Sweden's national platform for photonics and optical technologies. A non-profit economic association, PS integrates stakeholders across industry, academia, and the public sector. Its mission is to increase members' business opportunities, support funding access – including connection to EU, and advocate for photonics in Sweden and internationally. Dr Lennart B.M. Svensson, co-founder of PhotonicSweden highlights the importance of small players in the ecosystem:

"The jobs are created in the large companies, but the small create the technology – we must cherish them in order to gain momentum and visibility."

Examples include Eclipse Optics (consultancy) and Entangly (system builder), which help large firms adopt new technologies. PhotonicSweden also partners with Semicon Sweden, aligning efforts with the European Chips Act. PhotonicSweden activities include:

- **Optics & Photonics Conference (OPS)** – annual flagship event held [October 21-23 at KTH Elektrum Kista](#)
- **Nordic Photonics Forum (NPF)** – fostering Nordic-Baltic collaboration. This time a workshop was arranged named [Photonics & Electronics 4 Defense on 21 October 2025](#)
- **Optopubs** – informal seminars and networking
- **International collaboration** – ties with Photonics21 and EU initiatives such as PhotonHub Europe

In addition to the universities, Sweden's research institutes play a vital role in bridging academia and industry. **RISE – Research Institutes of Sweden** is the country's largest research institute, with fiber laboratories in Kista and fiber production facilities in Hudiksvall supporting photonics innovation and industrial applications. **SWERIM – Swedish Research Institute for Mining, Metallurgy and Materials** contributes complementary expertise in advanced materials and manufacturing processes that enable next-generation photonic components and systems.



Overview of PhotonicSweden's member companies, more information on www.photonicsweden.org

Looking ahead: inspiring the next generation to a growth sector

Attracting talent is essential. The [Carla project](#) is an example of a program to attract more and diverse talent to photonics through free workshops with companies and universities. In one edition, 138 students engaged with 13 companies and five universities. Companies such as Scania, Ericsson and Mycronic joined, and both students and industry valued the early connections. However, more outreach is needed. As Svensson points out, technical sectors often struggle to communicate with non-specialists. Companies like Volvo and Scania, which offer factory tours and demonstrations, show how industry can make opportunities visible to students and the public. Photonics, and deeptech more broadly, would benefit from similar efforts. The sector itself is projected to grow rapidly – emerging areas include photonics in medicine (imaging, laser surgery, wearable devices), silicon-photonics integration, and quantum-photonics systems. Looking further ahead, opportunities exist in new materials, RF-photonics, and even neuromorphic photonic computing (sources: Photonics21, EU research roadmaps).

Additional Reading: companies in Sweden's photonics ecosystem

Photonics is a true enabling technology. Swedish companies range from advanced component suppliers to global system providers and fast-moving startups. The list below highlights some of the actors in the Swedish ecosystem – but it may not be complete. For updates, [please let us know](#). We at Semicon Sweden recommend all actors in the photonics / optics science area to get in touch with [PhotonicSweden](#).

Precision manufacturing and advanced light sources

Companies developing world-leading equipment for microelectronics, industrial processes, and advanced analytical research:

- [Mycronic AB](#) – Builds machines that produce the photomasks used to manufacture electronics and displays.
- [Excillum AB](#) – Designs compact X-ray sources used in medical imaging, battery inspection, and semiconductor production.
- [Cobolt AB \(HÜBNER Photonics\)](#) – Manufactures lasers for imaging, detection, and material analysis.
- [Optoskand AB \(Coherent\)](#) – Supplies fiber-optical systems that deliver high-power laser beams for industrial

Integrated photonics and core components

Firms providing core technologies that allow light to be integrated into chips and systems:

- [Silex Microsystems AB](#) – Manufactures tiny mechanical and optical structures (MEMS) used in sensors, projectors, and communication systems.
- [Finisar Sweden AB \(Coherent\)](#) – Develops lasers and optical components for high-speed internet and data communication.
- [Spectrogon AB](#) – Produces optical filters that select specific wavelengths of light, used in sensors, monitoring, and defense.
- [Solinide AB](#) – A Chalmers spin-off developing photonic integrated circuits (PICs) that control light signals on chips.

Sensing, monitoring, and industrial applications

Photonics embedded in systems that deliver crucial data and functionality across demanding sectors:

- [FLIR Systems AB \(Teledyne FLIR\)](#) – Produces thermal cameras that detect heat, used in defense, industry, and rescue.
- [Senseair AB](#) – Develops gas sensors for measuring air quality, CO₂ levels, and emissions.
- [Magna Electronics Sweden AB](#) – Creates automotive safety systems such as LiDAR and vision sensors.
- [Tobii AB](#) – Develops eye-tracking technology for healthcare, gaming, and research.
- [Saab AB](#) – Uses photonics in defense applications such as surveillance and targeting.
- [Trimble AB](#) – Provides precision surveying and mapping equipment, including 3D laser scanners.

High-growth startups and specialized SMEs

Innovative smaller entities bringing new photonics technologies to market:

- [Entangly AB](#) – Builds advanced laser-based systems for research and industry.
- [Eclipse Optics AB](#) – Offers optical design services, for example in automotive lighting.
- [Beamonics AB](#) – Develops photonic components for high-speed communication and signal processing.
- [Optronic Partner pr AB](#) – Designs and manufactures instruments that measure light and optical signals.