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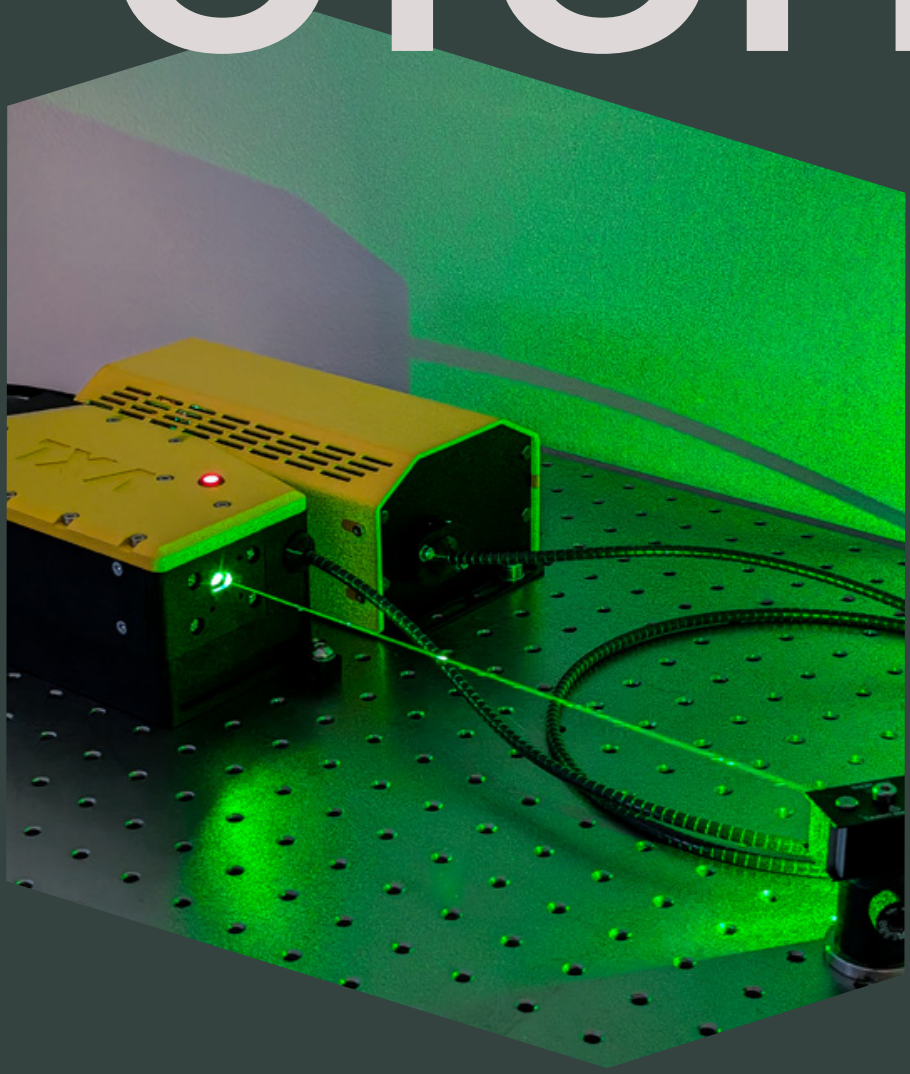
Suomen fotoniikan seura ry:n julkaisu

# Fotoni



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**Fotoni 1/2026**

**Julkaisija:** Suomen fotoniikan seura ry

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**Tilaukset ja osoitteenmuutokset:**
Lehti toimitetaan jäsenetuna Suomen fotoniikan seuran jäsenille. Vuoden kuluessa liittyvät uudet jäsenet saavat alkuvuoden numeron jäsenetuna niin kauan kuin painos riittää. Osoitteen muutokset suoraan jäsenasioiden hoitajalle, ks. www.photonics.fi

**Taitto:** Eero Sundvall

**Kannen kuva:** Vexlum Oy,

**Paino:** Eräsalon Kirjapaino Oy, Tampere

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# Pää-toimittajalta

Tätä kirjoittaessa maailman tilanne ei voisi olla enempää solmussa ja lähitapahtumien ennustettavuus heikompi. Silti teeskentelemme elävämme kuin mitään ei olisi menossa. Sentään seuraamme polttoaineiden hinnan päivittäistä kehitystä, joka on seurausta käynnissä olevien sotien synnyttämästä kaoottisuudesta. Turtumus sotien hyökkäyksen kohteena olevien valtioiden ja ihmisten menetyksiin ja kärsimyksiin on tullut arkeen. Milloinkahan ihmisyys astuu kuvaan, paljon ei historiasta ole opittu.

Tässä numerossa pääsemme tutustumaan Tamperelaisen fotoniikka yrityksen Vexlum Oy:n viime aikojen lupaavaan kehityskaareen. Taajuuskampojen taustoista ja tulosta korkean erotuskyvyn Fourier spektroskopiaan tutkimuksessa ja teknologian potentiaalista nopeaan ja alhaisiin pitoisuuksiin ulottuvaan kaasujen tunnistukseen kirjoitti Markku Vainio. Vasta päättyneestä jäsenistökyselyn tuloksista on luettavissa Anne-Mari Kankaiston napakka analyysi toiminnastamme. Kouluarvosana 4,4/5 ja toteamus siitä, että olemme hyvin tärkeä kansallinen fotoniikkaklusteri, ovat mieltä hiveleviä tuloksia, joista voimme olla erityisen tyytyväisiä, mutta jotka myös kannustavat etsimään uusia keinoja fotoniikan tuntemuksen laajentamiseksi ja edistämään työsarkaa Suomen fotoniikka ekosysteemin hyväksi. Esittelemme myös käynnissä olevat toimintamme kannalta tärkeät Eurooppaan ulottuvat ja kotimaassa verkostoivat projektit rahoitusmahdollisuuksineen ja yhteistyökuvioineen. Seuramme tieteellisen neuvottelukunnan puheenjohtaja Jyrki Saarinen kirjoittaa neuvottelukunnan keskeisistä tavotteista.

*Kustavissa 24.04.2025*
**Jouko Korppi-Tommola,**
**FOTONI lehden päätoimittaja**

> **Kouluarvosana 4,4/5 ja toteamus siitä, että olemme hyvin tärkeä kansallinen fotoniikkaklusteri, ovat mieltä hiveleviä tuloksia, joista voimme olla erityisen tyytyväisiä**

# Puheen-johtajan palsta

Valokuva: Reijo Koirikivi, Studio P.S.V.

Tervehdys FOTONI-lehden lukija!

Kirjoittaessani tätä palstaa huomaan jo innolla odottavani lähestyvää OPD2026-tapahtumaa Jyväskylässä toukokuun lopulla. Tapahtuma on meille yhdistyksenä vuoden tärkein kohtaamispaikka, ja luvassa on jälleen mielenkiintoinen kattaus kutsuttuja puheita, akateemisia ja teollisuuden esityksiä, postereita, oheistapahtumia, monipuolinen yritysnäyttely ja runsaasti verkostoitumismahdollisuuksia. Tällä kertaa tapahtumassa on myös Photonics Finlandin oma esittelypiste, jossa kerromme yhdistyksestä ja toiminnastamme. Tulkaahan vierailemaan, jakamaan palautetta ja kertomaan toiveitanne toiminnan kehittämiseksi. Minunkin kanssani saa tulla juttelemaan - nykäise vaikkapa hihasta!

Hallituksessa olemme tänä vuonna jatkaneet työtä Photonics Finlandin vaikuttavuuden vahvistamiseksi. Tavoitteena on, että yhdistyksemme vastaa entistä paremmin jäsenistön tarpeisiin ja odotuksiin, jotta voimme yhdessä kehittää fotoniikan ekosysteemiä Suomessa. Teimmekin alkuvuodesta jäsenkyselyn saadaksemme paremman kokonaiskuvan tarpeista ja toiveista. Tuloksista kerromme jo tässä lehdessä, ja palaamme niihin myös vuosikokouksessa 27.5. Vuosikokous on erinomainen hetki pysähtyä yhteisten tavoitteiden äärelle ja varmistaa, että toimintamme palvelee jäsenistöä parhaalla mahdollisella tavalla.

Hallitus on valmistellut uuden neuvonantajaelimen, Industry Advisory Board -ryhmän, perustamista, jotta yritysjäsenten näkemykset saataisiin entistä paremmin kuuluviin toiminnassamme. Akateemisten ja tutkimusorganisaatioiden muodostama tieteellinen neuvonantajaryhmä, Scientific Advisory Board, on toiminut jo aiemmin, ja sen toiminta on koettu tärkeäksi. Hallituksessa olemme päätyneet siihen, että vastaava ryhmä tulisi muodostaa myös yritysjäsenille. Kerromme tästä aloitteesta vuosikokouksessa ja tuomme esityksen jäsenistön päätettäväksi. Toivon, että esitys saa kannatusta ja yritysjäsenten ääni toiminnassamme vahvistuu entisestään.

Haluan kiittää kaikkia, jotka ovat olleet mukana tapahtumien järjestämisessä ja osallistuneet niihin aktiivisesti. Kiitos myös hallituksen jäsenille kuluneesta vuodesta. Yhteisö ja yhteistyö näkyvät parhaiten, kun kohtaamme. Toivon, että tapaan monia teistä OPD2026:ssa Jyväskylässä ja European Optical Societyn vuosikokouksessa EOSAM:ssa Tampereella elokuussa!

*Puheenjohtaja,*
*Suomen fotoniikan Seura ry.*
**Sanna Aikio**

**Tavoitteena on, että yhdistyksemme vastaa entistä paremmin jäsenistön tarpeisiin ja odotuksiin, jotta voimme yhdessä kehittää fotoniikan ekosysteemiä Suomessa.**

# Semiconductor laser company Vexlum Oy on the go!

Vexlum Oy has emerged as a leading developer of advanced semiconductor laser gaining market acceptance and broad international visibility. Its proprietary semiconductor-based Vertical-External-Cavity Surface-Emitting Laser (VECSEL) technology addresses critical bottlenecks in deephigh-tech industries: the lack of compact, cost-effective, high-power laser sources at precise wavelengths, and covering wavelength regions not readily available from existing technologies.

> The case is an excellent story about how academic persistent research work has been transformed into the successful and growing bussiness of a vibrant spin-off company.

Applications, such as atomic clocks, quantum computers, as well as next-generation semiconductor metrology, free-space optical communication even dermatologytechnology need compact, high-precision and high power lasers. To meet this market demand Professor Mircea Guina and entrepreneurship-driven laser technology researcher Dr. Jussi-Pekka Penttinen founded a company named Vexlum in 2017, based on the know how of the long R&D development program at Optoelectronics Research Centre of Tampere University, and supported by the technology transfer project (R2B) by Business Finland. During 2025 and early 2026, the company has made substantial steps to develop new applications for their VECSEL lasers by aquiring expanding new industrial partnerships, Europian Space Agency contract and acquiring substantcial seed investement for scaling up their production. The case is an excellent story about how academic persistent research work has been transformed into the successful and growing bussiness of a vibrant spin-off company.

Company's recent highlight includes a significant contract with the European Space Agency (ESA) to develop a high-power VECSEL lasers to be used in adaptive optics enabling next-generation space communication. More precisely, the company will develop a yellow guide star laser for the ESA to accelerate high bandwidth satellite communication deployment. Yellow VECSELs are recognized as instrumental for developing more compact and affordable sodium guide stars, which are used in terrestrial telescopes equipped with adaptive optics. In these systems, the laser beam is used to excite sodium atoms at ~90 km height in the atmosphere, and the resulting 'artificial guide star' is used

as a reference point for the adaptive optical system, to compensate the image distortions due to atmospheric perturbations. These guide star lasers should have a narrow spectral linewidth of a few MHz around 589 nm and be locked to the sodium absorption doublet at *D2* 588,995 nm or *D1* 589.592 nm to generate a 'guide star'. Such a virtual reference point allows even smaller telescopes to precisely measure and correct for atmospheric distortions, ensuring that high-speed laser links remain stable and efficient, regardless of atmospheric conditions or time of day. The contract directly supports ESA goals in Europe to advance optical ground station technology by significantly reducing costs and complexity – key aspects for high-speed optical links. By enabling more ground stations, including compact and automated solutions, to support high-throughput data transfer. Not only current communication bottlenecks are addressed but also building a more robust, scalable and accessible infrastructure for the future of Earth observation, space exploration and global connectivity. The work will focus on developing and prototyping a powerful yellow laser system that can generate the artificial guide star addressing the need to reduce the cost and foot-print of such laser architecture to less than 50% of existing technologies.

The company will continue its established path to become a leading supplier of advanced laser solutions enabling industrial scaling of quantum technologies. The business development is accelerated by the introduction of a compact laser platform in the beginning of 2026, the "VXL" product line, that represent a significant step in terms of high performance lasers with a compact and robust design. Single-frequency, high-power, low-noise lasers with precisely tailored of wavelengths matching the rich spectroscopic transitions used in quantum technologies with trapped ions or neutral atoms have been the core products of the company. The initial laser platform, known as "VALO", has gained a strong traction for research-type application, while the "VXL" system enables transition to industrial scaling. The size and cost of lasers available to meet the needs of quantum technology have long been recognized as a bottleneck in advancing quantum technologies. Lack of a mature enabling technology supply chain further slows down scaling of quantum computing technology. The "VXL" lasers has already been deployed in early-access projects by research organizations and universities, focusing on quantum computing and quantum sensing technologies. In addition, this compact laser platform has a potential in innovative products for semiconductor and medical markets.

The company has recently received a 10 milj. € seed investment, the highest received by any photonic company in the Nordic Countries, to boost scaling up technologies such as quantum computing and atomic clocks with cost-effective, high-power laser sources. The company expects these small size laser also to be extensively used in manufacturing industry in the future. The capital will improve Vexlum's manufacturing capacity and production scale. *"Tampere has emerged as a leading hub for optoelectronics and III-V semiconductor technology, building on a strong foundation of world-class academic research and a proven ability to translate it into industrial innovation. This investment round represents a decisive step in scaling our ambitions, securing a leading position for Tampere and Finland in the advanced semiconductor industry,"* a comment by professor Mircea Guina, Chairman and

> THE COMPANY HAS RECENTLY RECEIVED A 10 MILJ. € SEED INVESTMENT, THE HIGHEST RECEIVED BY ANY PHOTONIC COMPANY IN THE NORDIC COUNTRIES, TO BOOST SCALING UP TECHNOLOGIES

Co-Founder of Vexlum in the announcement news of the investment.

And amongst the latest news Vexlum announced a strategic co-operation with OXIDE Corporation, a Japanese company specialized in making premium nonlinear optical crystals for frequency conversion, in particular for reaching UV spectral region. The collaboration focuses on the development and manufacturing of high-power UV laser systems. A cornerstone of this collaboration is the now commercially available 302 nm laser light source. VXL has been field tested with OXIDE crystals over the last several months to deliver high-power UV output in a compact and reliable system. Beyond quantum computing, the partnership addresses the rigorous demands of semiconductor manufacturing. In this sector, UV lasers provide the fine-tuned precision necessary for inspecting and manufacturing new generation semiconductor chips.

## VECSEL laser in short

In general, VECSEL lasers provide a unique combination of wavelength coverage from the visible to the mid-IR range, high output power up to the 100 W level, high brightness, single-frequency operation, efficient intracavity frequency conversion, ultra-short pulse generation down to the sub-picosecond range with GHz repetition rates, and low noise[1,2]. These characteristics have given VECSELs the status of one the most versatile laser technology platform there is. These lasers are instrumental for a wide range of applications in spectroscopy, life science, laser cooling, laser projection, microscopy, and optical frequency comb generation, and their use is expected to experience a positive momentum and trigger new developments.

> These characteristics have given VECSELs the status of one the most versatile laser technology platform there is.

Laser chip of a VECSEL consists of several precisely designed thin semiconductor layers, grown consecutively as wafers using high vacuum Molecular Beam Epitaxy, a specialty semiconductor technology used and developed at Tampere University for about 40 years. Using different III-V semiconductor materials, such as gallium arsenide, indium phosphide, and gallium antimonide, laser gain wafers are fabricated for specific wavelength targets. Specially processed chips from these wafers are then assembled into an extended optical cavity structure and pumped by high power diode lasers (Figure 1).

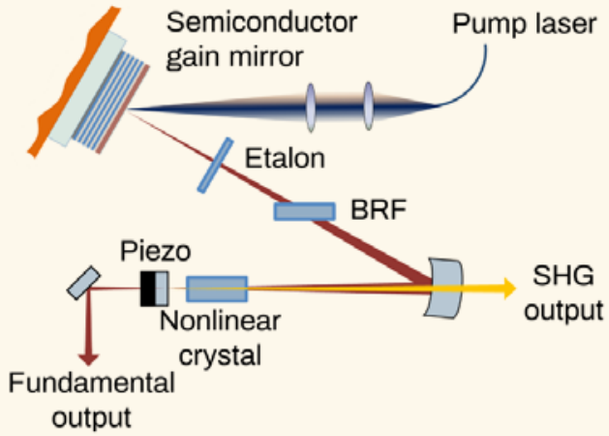


*Figure 1. Optical layout of a Vertical-External-Cavity Surface-Emitting Laser (VECSEL). Figure reproduced with permission from Vexlum Oy.*



The potential for commercial applications of VECSELs lies on a know-how to make the laser chip for a particular wavelength, as well as ability to realizing the external cavity while ensuring a good thermal management, an essential feature in power scaling. The laser can be mode-locked by adding a semiconductor saturable absorber mirror (SESAM) in the cavity to produce pulsed operation in the sub-picosecond time domain.[2] Intra-cavity optical filters and piezo elements are used for stabilizing the emission wavelength and cavity length, and together with an intracavity etalon to allow the output frequency to be determined with extreme precision. Adding a non-linear crystal in the cavity allows for very efficient intracavity frequency doubling down to UV spectral region. It becomes obvious even from the simple layout shown in Figure 1. that VECSEL laser is a relatively small compact and versatile light source.

*Ylistön kampuksella 24.04.2026*
**Jouko Korppi-Tommola**

References:

1. M Guina et al 2017 J. Phys. D: Appl. Phys. 50 383001.
2. U.Keller et al 2012 Photonic International, pp. 28-31.

# Spectroscopy with a twist

Markku Vainio

University of Helsinki



Fourier-transform spectroscopy (FTS) is among the most widely used tools in chemical analysis, yet it remains an active area of research. Advances in photonics continue to push its performance toward fundamental limits, opening new possibilities for faster, more precise, and more versatile measurements. At the Department of Chemistry of the University of Helsinki, we use established techniques such as Fourier-transform infrared (FTIR) spectroscopy, but also develop new methods based on optical frequency combs and structured light.

The basic idea of FTS is conceptually simple: a light signal is recorded as a function of time, and its Fourier transform yields the corresponding spectrum. When light interacts with a sample before detection, absorption or emission features are encoded in this signal, enabling identification and quantification of the molecular species present. This principle can be directly applied in some areas, such as nuclear magnetic resonance spectroscopy, but not in the optical domain. Molecular vibrations - and thus the infrared light used to probe them - have frequencies far too high for photodetectors or data acquisition electronics. To address this, optical FTS requires a mechanism that maps optical frequencies to lower, detectable frequencies.

In conventional FTIR instruments, this frequency downscaling is achieved using a scanning-mirror Michelson interferometer, which converts optical frequencies into a slow time-domain signal (interferogram) that can be recorded and Fourier transformed (Fig. 1A). This elegant approach became practical with the development of sufficient computational power to perform fast Fourier transforms. FTIR spectroscopy is now a workhorse technique that uses incoherent infrared light from an incandescent source or the sun to analyze solid-, liquid-, and gas-phase samples with superior spectral resolution and linearity compared to spectrometers based on prisms or gratings.

Despite its success, FTIR has inherent limitations. The achievable spectral resolution depends on the maximum travel range of the scanning mirror: higher resolution requires a larger interferometer. For example, resolving features narrower than 300 MHz, often necessary in gas-phase spectroscopy, requires an interferometer arm exceeding half a meter. This not only increases instrument size but also slows measurements, as long mechanical scans with interferometric precision are required.

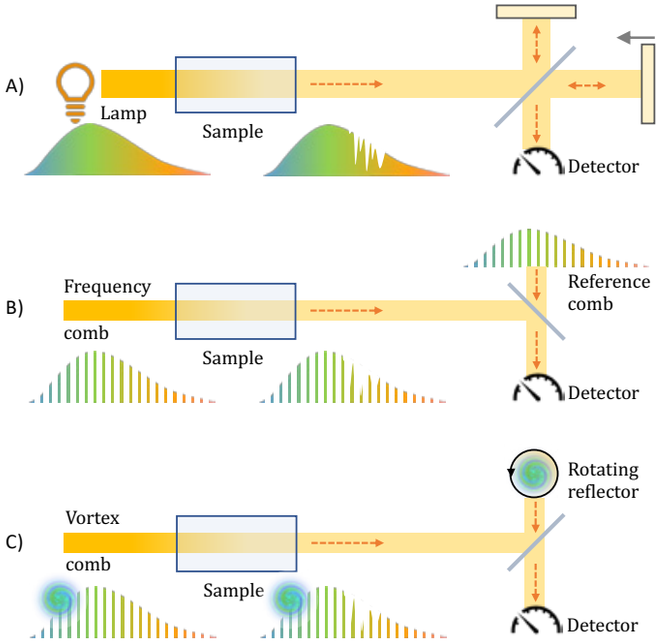


*Fig. 1. Three generations of optical Fourier-transform spectroscopy.*

*A) FTIR spectroscopy based on a Michelson interferometers;*

*B) Dual-comb spectroscopy;*

*C) Vortex-comb spectroscopy.*

To overcome the speed and spectral resolution limitations of FTIR, alternative laser-based techniques have been developed over the past two decades. This renewed interest in FTS was sparked by the introduction of the optical frequency comb, an invention that led to the 2005 Nobel Prize in Physics. Among its many important applications, optical frequency combs enable FTS with practically unlimited spectral resolution, at speeds limited only by the fundamental Nyquist sampling rate. This is realized in dual-comb spectroscopy (Fig. 1B), which allows real-time monitoring of dynamic processes with time resolution reaching sub-microsecond scales, and which can be configured for sub-kHz spectral accuracy in length and time metrology, as well as in high-precision molecular spectroscopy.

Unfortunately, these advantages come at the cost of increased complexity. The dual-comb technique typically requires two femtosecond lasers synchronized with sub-Hz precision in the optical (~100 THz) regime. Therefore, much ongoing research focuses on simplifying implementations, extending operation to relevant spectral regions, and developing compact, cost-effective systems. In Helsinki, we have contributed to this effort by developing a greatly simplified form of infrared dual-comb spectroscopy, enabled by the inherent mutual coherence of dual-comb sources generated through seeded optical parametric generation in nonlinear optical waveguides (M. Roiz et al., Opt. Lett. 49, 2473 (2024)). As an example part of acetylene absorption spectrum measured with this setup is shown in Fig. 2.

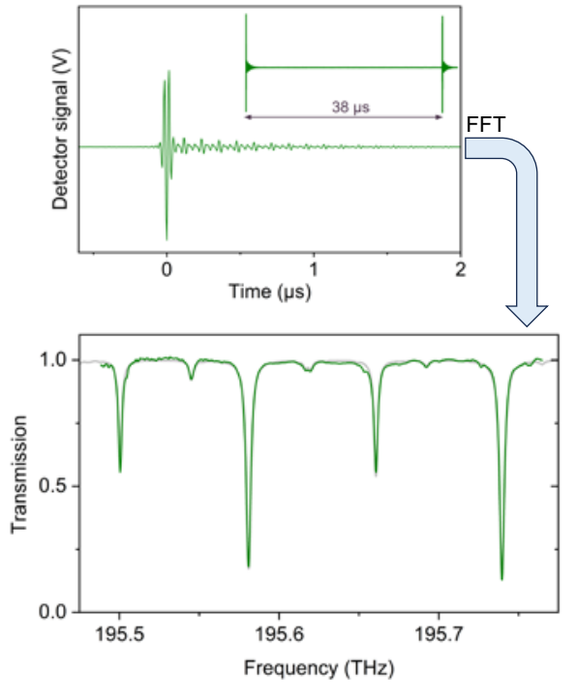


*Fig. 2. Example of dual-comb spectroscopy of the $\nu_1+\nu_3$ ro-vibrational band of acetylene. The upper panel shows an interferogram recorded in 38 µs, and the lower panel shows the corresponding spectrum that was obtained by averaging 29 000 interferograms (over 1 second) prior to performing a fast Fourier transform (FFT). The optical spectral resolution is 250 MHz.*

The complexity of dual-comb systems has motivated us to explore alternative approaches that require only a single light source. With this in mind, we have recently proposed a novel form of FTS that comes with a twist: it is based on optical vortex beams, i.e., light fields that carry well-defined orbital angular momentum (OAM); Fig. 1C. We have experimentally demonstrated that this method can achieve sub-300 MHz spectral resolution in tens of milliseconds, compared to tens of seconds required in conventional FTIR (S. Larnimaa and M. Vainio, AIP Advances 14, 105329 (2024)). Despite this promising proof-of-concept demonstration, the practical realization of the new method is still in its infancy. To achieve an unambiguous mapping between optical and detected frequencies, the light source must be a specialized type of optical frequency comb in which each spectral component is associated with a distinct OAM state. Such sources of high-dimensional structured light are not yet readily available and remain an active area of research. Nevertheless, they hold promise not only for spectroscopy but also for broader applications in photonics.

In summary, Fourier-transform spectroscopy continues to evolve from its classical implementations toward advanced laser-based approaches. While FTIR remains indispensable in practical applications, dual-comb spectroscopy and emerging methods illustrate how fundamental innovations in light generation and manipulation can redefine the limits of spectroscopic measurements - balancing precision, speed, and experimental simplicity.

**Markku Vainio**
University of Helsinki

# Member survey highlights networking, events and advocacy as core strengths of Photonics Finland

The Photonics Finland Member Survey 2026 shows that the organisation is widely regarded as a highly important national cluster for photonics. Respondents rated the importance of Photonics Finland in promoting Finnish photonics at a high level (average 4.4/5), and the organisation is generally seen as representing its members' interests well.

According to the survey, networking opportunities, the OPD event, newsletters as well as industry advocacy and visibility work are among the most valued activities. OPD clearly stands out as the single most recognised and appreciated event, while events in general are seen as a key platform for connecting companies, research organisations and students.

Members most often receive information about Photonics Finland through newsletters, direct member communications, events and Fotoni magazine. Social media plays a complementary role, particularly for visibility and outreach, but does not replace direct communication with members.

Looking ahead, respondents emphasise the need to further strengthen collaboration between industry and research, which emerged as the most important future focus area. In addition, members highlighted the importance of domestic networking, stronger support for funding-related issues – especially for SMEs and startups – and internationalisation activities, such as trade fairs and delegations. Talent development and stronger engagement with students and early career professionals were also frequently mentioned.

When asked about future opportunities, respondents pointed to technological developments in photonics and sensing, AI, sustainability driven applications, health technologies and dual use solutions as key growth areas. Broader megatrends such as digitalisation, stricter environmental regulation and increasing demand for advanced sensing were also seen as creating new market opportunities.

At the same time, respondents identified several challenges that may affect future success. These include access to long term funding, availability of skilled talent, rapid technological change, increasing global competition, supply chain uncertainties and regulatory complexity. From the academic perspective, concerns were raised about maintaining strong fundamental photonics education and research capabilities and ensuring sufficient student inflow to the field.

Overall, the survey underlines Photonics Finland's role as a unifying force and common voice for the Finnish photonics ecosystem. Members see clear opportunities to further increase impact through more concrete matchmaking, improved visibility of outcomes, and continued strengthening of collaboration across industry, research and education.

The Photonics Finland team thanks everyone who answered the survey. These insights are valuable in planning our activities to bring value for our members and for the whole Finnish photonics ecosystem.

*Joensuu 19.04.2026*
**Anne-Mari Kankaisto**
*Communications manager of Photonics Finland*

# Photonics Finland ongoing projects 2026

Photonics  Finland is a partner in a number of ongoing European and National projects to promote contacts to important players relevant for the Society members. The projects also provide needed funding for everyday activities of the office personnel. Here we list four most important projects on the go right now for the information of our readers.



## PhotonQBoost: Advancing Photonics & Quantum Innovation in Europe

The PhotonQBoost project (“Photonics and Quantum Technologies for Sustainable Industry”) is supporting European SMEs in addressing sustainability and resilience challenges through the adoption of photonics and quantum technologies.

PhotonQBoost acts as a gateway for SMEs across sectors such as manufacturing, life sciences, agrifood, mobility, and ICT, helping them match their needs with advanced photonics and quantum solutions. As part of its first open call for innovation, 15 SMEs have already been funded, enabling them to develop and scale new solutions.

A new call will be launched in early 2027, offering funding of up to €40,000 per SME to further accelerate innovation and market uptake. In addition, PhotonQBoost offers a comprehensive pipeline of services, combining advisory-driven innovation support, technology support, and sustainability transition activities, allowing SMEs to access expert guidance at any time. The project also actively promotes cross-border collaboration, with the next matchmaking mission focused on Mobility, planned in Stuttgart in October 2026.

Through its integrated approach, combining funding, advisory support, and networking opportunities, PhotonQBoost plays a key role in accelerating the adoption of photonics and quantum technologies for a more sustainable and competitive European industry.

Photonics Finland is a project partner in PhotonQBoost and is leading the work package on communication and dissemination, ensuring visibility of project activities, stakeholder engagement, and effective dissemination of results across Europe.

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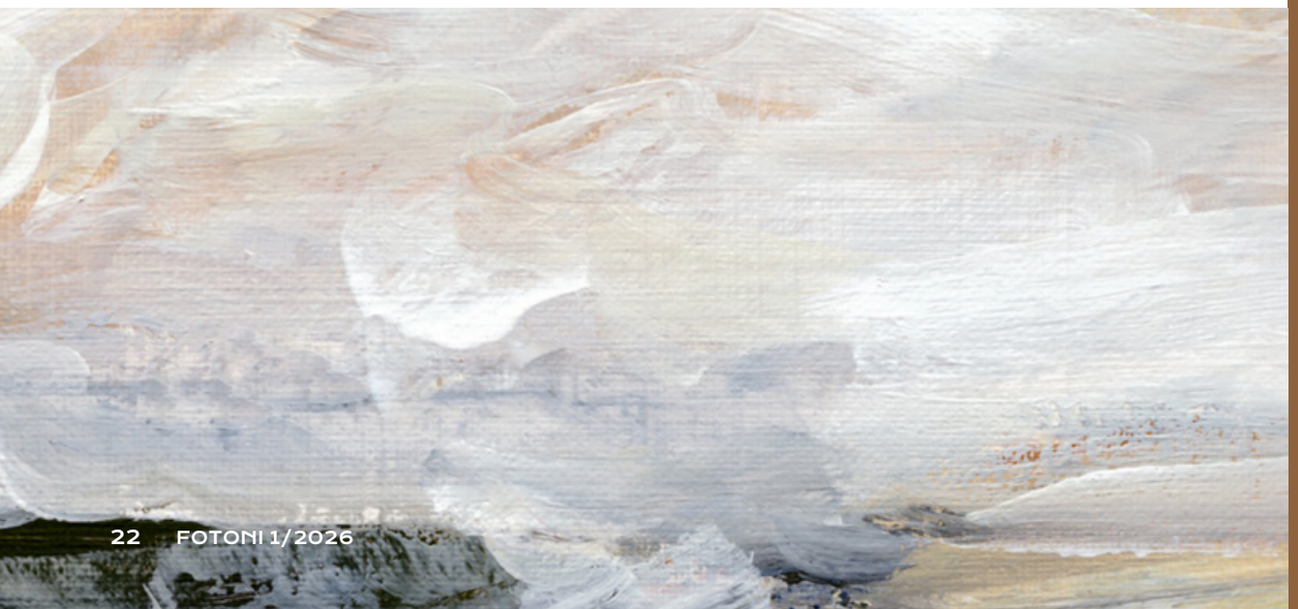
# 360 CARLA Success Story: Bridging Academia and Industry

As the 360 CARLA project approaches its conclusion, we are proud to highlight the successful delivery of its key activities, all aimed at bridging the gap between academia and industry in photonics. Photonics Finland organised the company visits, including to Detection Technology and Vaisala, providing students with direct exposure to industrial environments, advanced technologies, and real-world applications. These visits enabled participants to engage with professionals, explore facilities, and gain valuable insights into career opportunities in the photonics sector. In addition, a dedicated career symposium for students was organised, bringing together stakeholders from academia and industry. The event focused on skills, career pathways, and collaboration opportunities, further supporting students in understanding how to transition from academic studies to industry roles.

Through these activities, the project has successfully supported early-stage researchers in their career development and strengthened connections within the photonics ecosystem.





# PIONEER: Photonics and Quantum Interregional Open Network for European Excellence and Resilience

Photonics Finland will take part in the upcoming *PIONEER – Photonics and Quantum Interregional Open Network for European Excellence and Resilience* project, which will establish an interregional Innovation Valley for photonics and quantum technologies across Europe. The project aims to address fragmentation in innovation ecosystems and strengthen Europe's position in these key enabling technologies, which are essential for the green and digital transitions, competitiveness, and strategic autonomy, as highlighted in the New European Innovation Agenda, the Chips Act, and the Quantum Flagship.Led by JOANNEUM RESEARCH, the five-year project (2026–2031) brings together 24 partners to address fragmentation in innovation ecosystems and strengthen Europe's competitiveness in key enabling technologies for the green and digital transitions.

Photonics Finland will lead the communication and dissemination activities within the project. With €15.5 million in total funding and support for more than 250 SMEs, PIONEER will foster collaboration, skills development, and innovation uptake across Europe.

# FiCCC – Finnish Chips Competence Centre

The Finnish Chips Competence Centre (FiCCC) connects Finnish and European companies with the latest semiconductor research, expertise, piloting facilities, and valuable networks. FiCCC provides expert services for those looking to innovate and experiment. With up-to-date knowledge of emerging opportunities, it also facilitates access to the expertise of other European Chip Competence Centres. FiCCC supports both European and Finnish semiconductor strategies, playing a key role in advancing, enabling, and strengthening the resilience of this vital part of our digital lives.

Chip Fusion (hosted by Tamlink ltd), Kvanttinova, Business Oulu, and Photonics Finland form the FiCCC consortium. Photonics Finland contributes to all work packages and leads WP6 (Dissemination, Communication and exploitation), linking FiCCC to the photonics ecosystem in Finland. We create awareness for our members about national and EU funding, pilot lines as well as future talents and technology providers. Photonics Finland ensures that photonics is promoted as a key technology in chip development.

Upcoming events include the 30th International Semiconductor Laser Conference in June in Tampere and Nordic Chip Summit in Espoo in September 2026.

> **FiCCC supports both European and Finnish semiconductor strategies, playing a key role in advancing, enabling, and strengthening the resilience of this vital part of our digital lives.**

# Scientific Advisory Board (SAB) of Photonics Finland

**After the Finnish Optical Society was renamed Photonics Finland, with major new participation from the Finnish photonics industry, the society wanted to ensure it continued to maintain close contacts with all universities, educational partners, and research organizations in the Finnish photonics ecosystem.**

The main task of the Scientific Advisory Board (SAB) is to support the Photonics Finland Board by evaluating and advancing the society's academic activities and providing expert insight into scientific quality, relevance, and future development. It acts as a strategic partner in strengthening the link between research excellence and society's broader goals. For example, every year SAB helps form the Scientific Program Committee for OPD and evaluates candidates for the Best PhD Thesis Award. SAB is consulted on various photonics-related technology topics. SAB is also a high-level gateway to Finnish universities, educational partners, and research organizations when communication, information distribution, or assignments are needed. The Chair of the SAB is invited to participate in Photonics Finland Board meetings to ensure seamless communication.

New tasks for the SAB will be the main communication with the Council of Finnish Academies (Suomen Tiedeakatemiat) and the Federation of Finnish Learned Societies (Tieteellisten seurain valtuuskunta TSV) on behalf of the Photonics Finland Board and the Office. SAB has also expressed concern about the coverage of optics and photonics in high school physics textbooks, and about the awareness of the term "photonics" even among physics teachers.

Every societal member of Photonics Finland, representing photonics research and education, may nominate one member to the SAB. Currently, the SAB members are:

- Aalto University: Professor Zhipei Sun
- University of Eastern Finland (UEF): Professor Jyrki Saarinen (Chair)
- University of Helsinki: Professor Markku Vainio
- University of Jyväskylä: Professor Juha Muhonen
- Karelia University of Applied Sciences: Juha Väyrynen
- Lappeenranta University: Associate Professor Erik Vartiainen
- Oulu University / Kajaani: Dr. Jarmo Hietanen
- Oulu University / Oulu: Professor Tapio Fabritius
- Riveria (North Karelia Municipal Education and Training Consortium): Jatta Herranen
- Tampere University: Professor Juha Toivonen
- University of Turku: Dr. Kimmo Luoma
- VTT Espoo: Dr. Timo Aalto
- VTT Oulu: Professor Jussi Hiltunen
- Åbo Academy: Associate Professor Nicklas Anttu

*In Joensuu 26th April 2026*

**Jyrki Saarinen, professor,**
**University of Eastern Finland**

**Chair of SAB/Photonics Finland**

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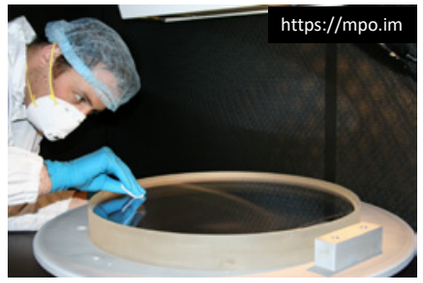


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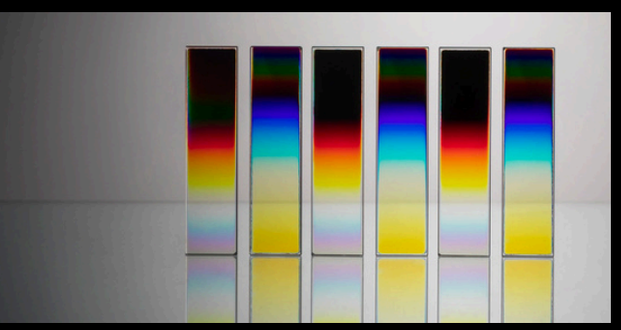

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