

# Optics & Photonics in Sweden 2022 (OPS) 4 - 7 October 2022

Umeå, Umeå University



## GENERAL INFORMATION

The Optics & Photonics in Sweden conference (OPS 2022) will be held on 4-7 October 2022 in Umeå at Umeå University. The conference is organised by PhotonicSweden (PS). On 7 October the Laser Lab Sweden will have a workshop.

More information: [photonicsweden.org](https://photonicsweden.org)

### GENERAL CHAIR

- Ove Axner (Umeå University)

### PROGRAMME COMMITTEE

- Maria Abrahamsson, Chalmers
- Magnus Andersson, Umeå University
- Ove Axner, Umeå University
- Petra Bindig, PhotonicSweden
- Joakim Bood, LTH
- Ludvig Edman, Umeå University
- Kristinn Gylafson, KTH
- Kenneth Järrendahl, LiU
- Magnus Karlsson, Chalmers
- Valdas Pasiskevicius, KTH
- Mikael Sjö Dahl, LTU Luleå
- Thomas Wågberg, Umeå University
- Petra Hardke, Thorlabs
- Urban Konradsson-Botes, Optonyx, Kista
- Håkan Olsson, SLU, Umeå
- Ewa Orłowska, Hamatsu Norden AB
- Christofer Silfvenius, Energimyndigheten
- Maria Strand, Adopticum, Skellefteå
- Lisa Rähmisch, LU, Lund
- Lennart BM Svensson, PhotonicSweden

### KEYNOTE SPEAKERS

will highlight European research and developments.

### INVITED TALKS

will cover a variety of topics in Optics and Photonics, reflecting current Swedish research and development at universities, institutes and industry.

### A POSTER SESSION

will provide an additional opportunity to display to the most recent developments and achievements. It will also give an overview of Optics and Photonics in Sweden and offer a good platform for creating new collaborations.

### BEST POSTER AWARDS

The best poster will be awarded with 3,000 SEK

The second and third prize will be awarded with 1,000 SEK. The poster awards are sponsored by:



### AN EXHIBITION AND A SESSION WITH COMPANY PRESENTATIONS

will be held in parallel to the technical sessions to provide industry, institutes, and associations an opportunity to display their products and services and bridge the gap between science and industry.

### ABSTRACT SUBMISSION FOR POSTER PRESENTATIONS

Authors are requested to submit an abstract of a half to one page (font 11, including figures and references). Contributions will be accepted for poster presentation. All authors are requested to register for the meeting separately from abstract submission.

Required poster size: The posters should have a maximum size of DIN A0 (841 x 1189 mm) preferably in a portrait format (not landscape format). Pins and similar pads will be provided by the organizer.

Abstracts can be sent to [petra@photonicsweden.org](mailto:petra@photonicsweden.org)

**Deadline for abstracts: 15 September 2022**

### EXHIBITION & SPONSORING OPPORTUNITIES

Please contact Lennart BM Svensson if you are interested in our exhibition and sponsor opportunities:

[lennart@photonicsweden.org](mailto:lennart@photonicsweden.org)

### FURTHER INFORMATION

For further information please go to [photonicsweden.org](https://photonicsweden.org)

### CONFERENCE VENUE

**Umeå University**

901 87 Umeå, Sweden

### JOB FAIR AT EXHIBITION

We will arrange a matchmaking between companies and job seekers at the conference Optics and Photonics in Sweden 2022 at Umeå University. It will take place on 5 and 6 October in the exhibition area. All exhibiting companies welcome students (graduates, undergraduates and PhD students) to discuss jobs, internships, etc.

More information on the conference can be found at

<https://photonicsweden.org/optics-photonics-in-sweden-2022/>

### APPLICATION FOR STUDENT FREE ADMISSION

Up to 10 students in a Bachelor's degree or Master's degree program can apply for free admission for OPS-2022, which is sponsored by Thorlabs Sweden AB.

<https://photonicsweden.org/wp-content/uploads/Apply-for-student-free-admission-to-Optics-Photonics-2022.pdf>

**THORLABS**

**REGISTRATION FOR PARTICIPANTS**

The registration deadline for online-registration is 20<sup>th</sup> of September.

Register here: <http://dinkurs.se/OPS2022Participants>

**REGISTRATION FEES**

3.300 kr +25% VAT	Non Members
2.600 kr + 25% VAT	Personal Members of PhotonicSweden and/or European Optical Society (EOS)
1.500 kr + 25% VAT	Student Members & Pensioner Members of PhotonicSweden and/or European Optical Society (EOS)
1.500 kr +25% VAT	Invited Speakers

Observe that all Swedish and European participants must pay 25% VAT (Moms) \*. The option without VAT is only for VAT-registered companies outside Europe.

All fees includes one person conference fee and all lunches & coffee breaks and conference dinner.

Personal annual member fee is 350 SEK/Year and student & pensioner annual member fee is 110 SEK/Year. Personal membership includes membership in PhotonicSweden, Svenska OptikSällskapet and European Optical Society.

**\* New EU VAT rules for courses and conferences**

*In March 2019, the European Court of Justice rejected Sweden's interpretation of the part of the VAT directive relating to access to events. The ruling means that payments to gain physical access to courses and conferences are to be seen as access to events and must therefore always be made in the country where the event is held. The change also means that foreign companies attending courses in Sweden will receive invoices issued with Swedish VAT. Participants from companies and organizations within the EU with a VAT number have the opportunity to claim back the VAT on the participation fee via their local tax authority. The UK left the EU (Brexit) in 2020 and is thus no longer an EU country. Now the same rules regarding VAT apply to the UK as to other countries outside the EU.*

**REGISTRATION FOR EXHIBITORS**

The registration deadline for online-registration is 20<sup>th</sup> of September.

Register here: <http://dinkurs.se/OPS2022Exhibitors>

**EXHIBITION FEES**

15.900 kr + 25% VAT	Non Members (incl. one person participation fee)
13.600 kr + 25% VAT	Company Members of PhotonicSweden (incl. one person participation fee)
2.600 kr + 25% VAT	additional exhibitors colleagues (incl. one person participation fee)

Observe that all Swedish exhibitors must pay 25% VAT (Moms). The option without VAT is only for VAT-registered companies outside Sweden.

All fees includes one person conference fee and all lunches & coffee breaks and conference dinner.

Exhibition stand will be selected based on registration order. Map of exhibition floor will later be sent out to exhibitors.

Please contact Lennart BM Svensson  
[lennart@photonicsweden.org](mailto:lennart@photonicsweden.org) if you are interested in exhibiting at OPS-2022.

**Goods for the OPS-2022 conference delivers to:**

Goods Label and Shipping Address:

**OPS-2022/Ove Axner**  
**Servicegränd 12**  
**Umeå universitet**  
**907 36 Umeå**

Map: <https://goo.gl/maps/aEnwaBE3rY2wte6o8>

Delivery contact at Husservice/Universum:

Mr. Jan-Erik Lingebrandt  
+46 (0)90 786 88 90  
+46 (0)70-350 51 72

**Hotel reservation**

PhotonicSweden has **reserved 20 double rooms and 40 single rooms** at Hotel Björken, which is close to the venue.

- Special price for single room SEK 750 per room and night
- Special price for double room SEK 1150 per room and night
- The accommodation price includes breakfast.
- The parking cost is SEK 80 per day.
- Enter the code "PhotonicSweden 2022" when booking to get the special price.
- Rooms not booked 3 weeks before arrival are automatically canceled.

**Hotell Björken**

**Visiting address:** Lasarettbacken 10

**Postal address:** Box 7986

907 19 Umeå, Sweden

**Phone:** +46 90 10 87 00

**E-mail:**

[hotell.bjorken.se@sodexo.com](mailto:hotell.bjorken.se@sodexo.com)

**Web:**

[www.hotellbjorken.se](http://www.hotellbjorken.se)

**Map:**

<https://goo.gl/maps/xLQdz8m8Z3yxUj3W9>

**VICTOR MALKA**

Weizmann Institute of  
Science, Rehovot, Israel

victor.malka@weizmann.ac.il

Victor Malka obtained his PhD  
thesis at Ecole Polytechnique in  
1990. He worked on atomic

physics, inertial fusion, laser plasma interaction, relativistic laser plasma interaction and on laser plasma accelerators, in which he makes several breakthrough contributions. He has published about 380 articles and has been invited in more than 200 international conferences. He got several prizes and grants including ERC and EIC ones. Since 2019 he is full time Professor at the Weizmann Institute of Science in Israel.

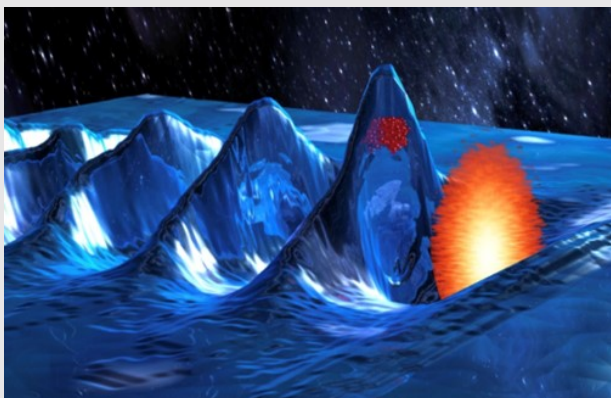
Laser Plasma Accelerators (LPA) rely on our ability to control finely the electrons motion with intense laser pulses [1]. Such manipulation allows to produce giant electric fields with values that can exceed by more than 3 orders of magnitude those used in current accelerator technology. Controlling the collective electrons motion permit to shape the longitudinal and radial components of these fields that can be optimised for delivering high quality electrons beam or energetic photons.

To illustrate the beauty of laser plasma accelerators I will explain some of these concepts that improve beam quality and show how one can use them to image relativistic plasma wave [3] or electron bunch.

Finally, I'll show the pertinence of the approach for many applications by considering the two most mature cases of relevance in security domain with non-destructive inspection compact gamma sources, and for radiotherapy with very high energy electrons delivered by compact LPAs [4].

Keywords: high power lasers, accelerators, X-ray beams, electron beams

- [1] V. Malka, *Europhysics Letters*, **115**, 54001 (2016)
- [2] V. Malka *et al.*, *Science* **22**, **298** (2002)
- [3] Y. Wan *et al.*, Accepted in *Nature Physics*.
- [4] V. Malka *et al.*, *Nature Physics* **4**, 447 (2008)

**HOLGER Schlüter**

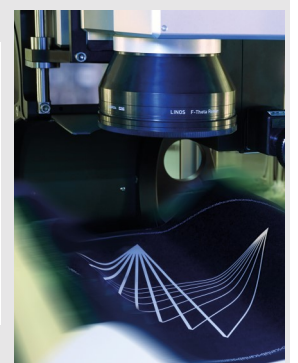
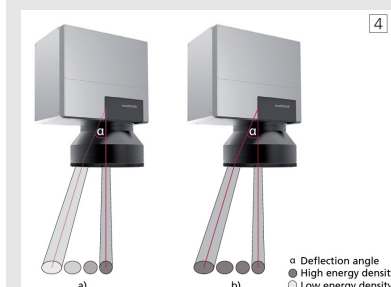
Business Development  
SCANLAB GmbH, Germany

h.schluter@scanlab.de

Holger Schlüter studied Physics in Aachen and made his Ph.D. at ILT Aachen in 1996. He joined TRUMPF and worked there in various leading positions in the United States. In 2008 he returned to Germany and worked as COO and CTO for Technolas Perfect Vision, a maker of surgical ophthalmic laser equipment. He joined SCANLAB in 2015 as the head of Business Development.

Many industrial laser applications are in production today. We present some of the most important applications as videos and investigate further which applications require galvanometer scanners. In the second part of the presentation some of the most important technologies involved in industrial galvanometer scanning are discussed. These include

- Setup of a galvanometer scan system
- Digital position detectors enable accuracy of  $\pm 4 \mu\text{m}$
- Innovative control algorithms increase throughput
- Spot distance control assures product quality and reduces scrap
- Image field corrections facilitate additional precision
- Trajectory planning and XL SCAN allow for processing with an accuracy of  $\pm 1.5 \mu\text{m}$
- High power ultra-short pulse (USP) lasers require new ideas
- Use case: Probe card manufacturing



## CONFERENCE SCHEDULE

### TUESDAY 4 OCTOBER 2022

14:00-21:00 **Exhibition set up**

Room: **Caféhörnan**

14:00-18:00

**Nordic Photonics Forum meeting**

Room: **Triple Helix, Universitetsledningshuset**

14:00 - 14:10

**Introduction**

14:10 - 14:40

**Make equality measurable,** *Maria Strand and Kenth Johansson, Adopticum, Skellefteå*

At Adopticum we love to measure things, it's what we do, it's a part of our DNA. But today we won't be talking about measuring from an optical point of view, but rather how we work with and measure equality in highly technical project.

14:40 - 15:20

**European Chips Act (ECA): Why do we need an Initiative?** *Thorbjörn "Toby" Ebefors, Smarter Electronic Systems.*

The European Commission has released its primary response to this crisis through the European Chips Act, aiming to double the European share of global microchip production by 2030 and reduce supply dependencies. The presentation highlights why Europe needs an Initiative for a Chips Act. There are three pillars of the Chips Act: Chips for Europe Initiative, Security of Supply, and Monitoring and Crisis Response. The situation today, and what is missing in the EU is addressed, as well as the most important activities.

15:20 - 15:35

**Coffee Break**

15:35 - 16:25

**European Chips Act** Continuation: *Thorbjörn "Toby" Ebefors, Smarter Electronic Systems*

**Support for Swedish Small and Medium sized Enterprises (SME's),** *Business Sweden / TBD*

Does your company have fewer than 250 employees and a turnover below 50 million euro? If so, we can help you expand your business overseas. Our government funding allows us to offer a wide range of tailored services to support your international growth.

16:25 - 17:00

**Innovation Support offered by EU-project PhotonHub**

A fund of 7.4 million Euro is earmarked for eligible companies, to perform technical innovation projects within the PhotonHub framework. Experts, laboratory resources, prototyping and test facilities across Europe are available to the projects.

*Lennart BM Svensson, PhotonicSweden*

*Åsa Claesson, RISE*

17:00 - 18:00

**Photonics Clusters**

Photonics Finland, *Juha Purmonen*

Danish Photonics Club, *Henrik Mertz, FORCE Technology, Denmark*

Baltics Photonics

Photonics in Latvia and NOP-2023 Norther Optics and Photonics in Riga, *Valters Jekabsons, LIAA, Latvia Embassy in Stockholm*

18:00-19:00

**Networking with drinks and fingerfood**

Room: **Triple Helix, Universitetsledningshuset**

## CONFERENCE SCHEDULE

### WEDNESDAY, 5 OCTOBER 2022

09:00-10:00 Room: **KB.E3.03 Kempe Salen in the KBC huset**  
On-site registration and welcome coffee

10:00-10:15 Room: **KB.E3.03 Kempe Salen in the KBC huset**  
**Opening Remarks**  
*Åsa Claesson, PhotonicSweden; Ove Axner, Umeå University*

10:15-11:00 Session Chair: Ove Axner  
**Keynote Talk**  
Manipulating Relativistic Electrons with Intense Laser Pulses  
*Victor Malka, Weizmann Institute of Science, Rehovot, Israel*

11:00-12:20 Room: **KB.E3.03 Kempe Salen in the KBC huset**  
**Exhibitor Presentations** Session Chair  
Exhibitor Pitch Talks *Lennart BM Svensson*

12:20-14:00 Room: **Restaurant Lingon, Brashörnan, Caféhörnan**  
**Lunch & Poster Session & Exhibition**

Room: **KB.E3.03 Kempe Salen**

14:00-15:00  
**Session A1 | Photonics for Life Sciences**

Session Chair:

14:00-14:20  
Functional fibers for opto-fluidic applications  
*Fredrik Laurell, Royal Institute of Technology (KTH)*

14:20-14:40  
Characterization of individual pathogens using optical tweezers based methods  
*Magnus Andersson, Umeå University*

14:40-15:00  
Plasmonically-powered trapping and rotation of gold nanorods  
*Hana Jungová, Chalmers University of Technology*

Room: **KB.E3.01 Lilla hörsalen in KBC huset**

14:00-15:00  
**Session B1 | Photonics application-funding**

Session Chair:

14:00-14:20  
TBD

14:20-14:40  
Examples of photonics development projects funded by SES and upcoming opportunities  
*Thorbjörn Ebefors, Ph.D, Acting Program Manager, Smarter Electronic Systems (SES) (only 5/10)*

14:40-15:00  
Examples of regional innovation funded projects through optical measurement technology and how to assist in new projects  
*Åsa Almström, Project Manager, The Adopticum Foundation, Skellefteå*

## WEDNESDAY, 5 OCTOBER 2022

15:00 - 15:20

Break

Room: **KB.E3.03 Kempe Salen**

Room: **KB.E3.01 Lilla hörsalen in KBC huset**

15:20-16:20

**Session A2 | Laser Driven Light and Particle Sources**
*Session Chair: Fredrik Laurell*

15:20-16:20

**Session B2 | Spectroscopy / 3D-analysis**
*Session Chair: tba*

15:20-15:40

Generation of attosecond light and relativistic electron pulses with ultra-intense lasers  
*Laszlo Veisz, Umeå University*

15:20-15:40

Laser Based Spectroscopy – Novel Solutions for Faster, Smarter Workflows ,  
*Robert Wills, Molecular Spectroscopy Product Specialist, Agilent Technologies LDA UK Ltd (only 5/10)*

15:40-16:00

Applications of Laser Plasma Accelerators  
*Olle Lundh, Lund University*

15:40-16:00

3D camera tracker for fast and easy physical performance analysis,  
*Jonas Sjöberg, Ph.D., Founder of Photon Sports AB, Umeå*

16:00-16:20

Physics at ultra-high intensities  
*Mattias Marklund, University of Gothenburg*

16:00-16:20

TBD

16:20-17:30

Break

17:30-19:00

**Poster Session & Exhibition & Beverage**

Room: **Brashörnan, Caféhörnan**

19:00-22:00

**Conference dinner**

Location: **Restaurant Lingon**

THURSDAY, 6 OCTOBER 2022

08:45-09:30  
Welcome coffee

Room: **KB.E3.03 Kempe Salen**

09:30-10:30  
**Session A3 | Spectroscopy / Spectrometry / Imaging**  
Session Chair: *tba*

09:30-09:50  
Precision spectroscopy using optical frequency combs – toward better understanding of exoplanetary spectra  
*Aleksandra Foltynowicz, Umeå University*

09:50-10:10  
Kilometer-range panoramic photon-counting 3D lidar  
*Markus Henriksson, FOI*

10:10-10:30  
FRAME: Snapshot imaging using coded light  
*Karolina Dorozynska, Lund University*

10:30-10:40  
Break

10:40-12:00  
**Session A4 | Advanced Photonic Materials**  
Session Chair:

10:40-11:00  
High-speed mid-infrared photothermal heterodyne imaging in a wide field of view  
*Florian Schmidt, Umeå University*

11:00-11:20  
Towards sustainable and efficient light-emitting electrochemical cells  
*Ludvig Edman, Umeå University*

11:20-11:40  
3D printed glass  
*Michael Fokine, Royal Institute of Technology*

11:40-12:00  
Redox-tunable optical nanoantennas based on conductive polymer nanostructures.  
*Shangzhi Chen, Linköping University*

Room: **KB.E3.01 Lilla hörsalen in KBC huset**

09:30-10:30  
**Session B3 | Lasers / Hyperspectral Imaging**  
Session Chair: *tba*

09:30-09:50  
Industrial lasers simplify elemental mapping based on LIBS (Laser Induced Breakdown Spectroscopy)  
*Elena Vasileva, Ph.D. Cobolt/HÜBNER Photonics, Stockholm*

09:50-10:10  
Lasers for Raman Spectroscopy Applications  
*Mickael Winters, Area Sales Manager Scientific Research & Instrumentation, Coherent, Gothenburg (only 6/10)*

10:10-10:30  
Automatic parasite detection in fish using Hyperspectral Imaging  
*Andreas Vidman, Prediktera AB (only 6/10)*

10:40-12:00  
**Session B4 | LIDAR applications / Forestry**  
Session Chair:

10:40-11:00  
Flasheye-Lidar used same as cameras: real-time 3d lidar monitoring for security and industrial applications,  
*Ida Rhenström, COO and Johan Söderberg, Lead Developer, Flasheye AB, Luleå*

11:00-11:20  
National Mapping of Swedish Forests using Airborne Lidar,  
*Mats Nilsson, Prof. Senior Advisor at the Department of Forest Ecology and Management, Department of Forest Ecology and Management, SLU, Umeå*

11:20-11:40  
Stem quality estimated from ground based laser scanning,  
*Kenneth Olofsson, Associate Professor, Department of Forest Resource Management, SLU, Umeå*

11:40-12:00  
Processing of remote sensing data, including ground scanning and drone images at the Ljungberg lab,  
*Jonas Bohlin, Section Manager, Department of Forest Resource Management, SLU, Umeå*

## THURSDAY, 6 OCTOBER 2022

12:00-13:45  
**Lunch break & Poster session & Exhibition**  
Room: **Restaurant Lingon and Glasövergången to Naturvetarhuset, Caféhörnan**

13:45-14:30  
**Keynote Talk**  
*Laser Applications and Scanner Technologies for Industrial Solutions*  
Holger Schlueter, SCANLAB GmbH, Germany  
Room: **KB.E3.03 Kempe Salen**

14:30-15:00  
**PhotonicSweden Awards and Poster Prize**  
Mikael Sjö Dahl, Luleå University, Peter Strömberg, Acoem AB

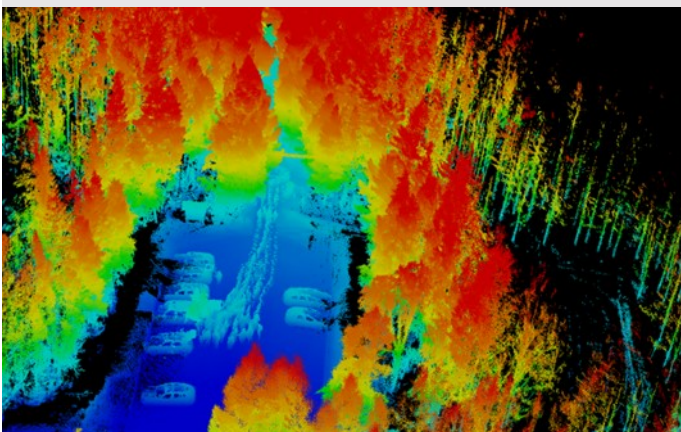
15:00-15:30  
**Coffee Break**

15:30-17:30  
**Lab visits**

### The Ljungberg laboratory at SLU (The Swedish University of Agricultural Sciences)

The Ljungberg laboratory is a training laboratory for 3D remote analysis of forests where the latest technology is available in terms of platforms and sensors.

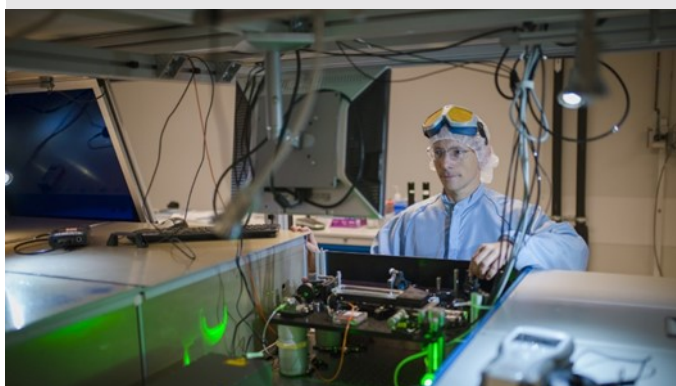
In the Remote sensing and forest inventory course at SLU we always has a demo of different sensors and platforms available for the students in the Ljungberg laboratory like for example processing remote sensing data, including ground scanning, drone images, etc



### The Department of Physics belongs to the Faculty of Science and Technology at Umeå University.

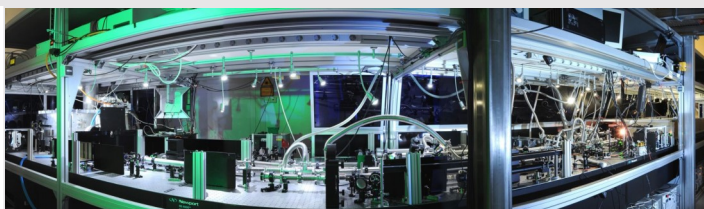
At present about 100 people work at the new Department of Physics, professors, lecturers, researchers, guest professors, postdocs, doctoral students, and technical and administrative staff.

We carry out research and research education in various fields, for example in optical physics, nonlinear physics, plasma physics, general relativity, condensed matter physics and nanotechnology, photonics, biological physics, complex networks, space physics and physics education.



FRIDAY, 7 OCTOBER 2022

*Laserlab  
Sweden*



8.30 – 14.45

Room: Triple Helix, Universitetsledningshuset.

**Laserlab Sweden Day- A presentation of the ongoing activities within Laserlab Sweden - A hot field with lots of job opportunities - CARLA Camp**

Laserlab Sweden is a Swedish network of Laser Research Infrastructures. It is organized in five nodes, comprising Lund Laser Centre, Laserlab Umeå, Laserlab Göteborg, Laserlab Uppsala, and Laserlab Stockholm. Further information can be found at <https://laserlab-sweden.se/>.

8.30 – 8.40

**Introduction to Laserlab Sweden**

Dag Hanstorp

8.40 – 9.40

**Presentation of the Gothenburg node.**

Talks and speakers: to be announced

9.50 – 10.50

**Presentation of the Lund node.**

Talks and speakers: to be announced

11.00 – 12.00

**Presentation of the Umeå node.**

Talks and speakers: to be announced

12.00 – 13.00

**Lunch**

13.00 – 14.30

**Presentation of the Stockholm/Uppsala nodes.**

Talks and speakers: to be announced

14.30 – 14.45

**Wrapping up**

Each node presentation will comprise a description of the node (15 minutes), followed by 2 – 3 presentations (15 – 30 minutes each) by node participants



## SPONSORS

**HAMAMATSU**  
PHOTON IS OUR BUSINESS

**EO** Edmund  
optics | worldwide

**THORLABS**



HÜBNER Photonics

**Smartare  
Elektroniksystem**

ELECTRONIC COMPONENTS & SYSTEMS

## SPONSOR OF THE PS STUDENT AWARD 2022

1<sup>ST</sup> PRIZE

**HAMAMATSU**  
PHOTON IS OUR BUSINESS

2<sup>ND</sup> PRIZE

**EO** Edmund  
optics | worldwide

## POSTER AWARD

IEEE  
**photonics**  
SOCIETY

## SPONSOR OF STUDENT PARTICIPATION FEES

**THORLABS**

## MEDIA PARTNERS

**ELEKTRONIK**  
TIDNINGEN

## SUPPORTED BY



UMEÅ  
UNIVERSITET

**EOS**

European Optical Society

Coherence for Europe

## EXHIBITORS

**Aimpoint**



**KIMMY**



**oplatek**  
Inspired by optics



**LASER 2000**



**OPTRONIC**

**exatronic**

**EO** Edmund  
optics | worldwide

**TILLQUIST**  
Specialists in measurement technology



**Agilent Technologies**

**COHERENT**

**THORLABS**



**TELEDYNE FLIR**  
Everywhere you look™

**nanor**

**HAMAMATSU**  
PHOTON IS OUR BUSINESS

**ECLIPSE**



**4photonics**  
YOUR PARTNER FOR PHOTONIC EQUIPMENT

**SiTek**  
ELECTRO OPTICS



HÜBNER Photonics

**RI.  
SE**

**beamonics**