Optics & Photonics in Sweden 2019 (OPS)
16-17 October 2019

Kista, Stockholm at Electrum

PhotonicSweden
The Swedish Technology Platform in Optics and Photonics

KTH
VETENSKAP
OCH KONST

GENERAL INFORMATION

The Optics & Photonics in Sweden conference (OPS 2019) will be held on 16-17 October 2019 in Kista, Stockholm at Electrum. The conference is organised by PhotonicSweden (PS).
More information: **photonicsweden.org**

GENERAL CHAIR
- Mattias Hammar (KTH)

PROGRAMME COMMITTEE
- Joakim Bood, LTH
- Petra Bindig, PhotonicSweden
- Åsa Claesson, RISE, Acreo Swedish ICT AB
- Kristinn Gylafson, KTH
- Åsa Haglund, Chalmers
- Kenneth Järrendahl, LiU
- Magnus Karlsson, Chalmers
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- Ewa Orlowska, Hamamatsu AB
- Håkan Pettersson, Halmstad University and Lund University
- Sergei Popov, KTH
- Mikael Sjödahl, LTU
- Gemma Vall-Llosera, Ericsson

- Christopher Dirdal, SINTEF A/S
- Krister Fröjdh, Proximion AB
- Tobias Hedqvist, Laser 2000 GmbH
- Larz Ignberg, Triple Steelix
- Kenth Johansson, Stiftelsen Adoptikum
- Ewa Orlowska, Hamamatsu Photonics Norden AB
- Lennart BM Svensson, PhotonicSweden
- Can XU, NEOLund AB

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.

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**
Deadline for abstracts: 27 September 2019

SPONSORING OPPORTUNITIES
Please contact Lennart BM Svensson if you are interested in our exhibition and sponsor opportunities:
lennart@photonicsweden.org

FURTHER INFORMATION
For further information please go to
photonicsweden.org

CONFERENCE VENUE
Kungliga Tekniska Högskolan (KTH)
Electrum, Kista
Isafjordsgatan 22
164 40 Kista

MATCHMAKING
We will arrange a matchmaking between companies and job seekers at the conference Optics and Photonics in Sweden 2019 at Electrum, Kista. It will take place on 16th and 17th of October and interested companies can get 20 minutes slots to meet interested candidates. We have a private room where the discussions can take place and a pin board where the job seekers mark their time.

If you are interested, let us know beforehand, no later than 2nd of October by sending a note to Petra Bindig (**petra@photonicsweden.org**).

The service is free for all participating companies and attendees.

More information on the conference can be found at **photonicsweden.org/3654-2** where the full program is available.

REGISTRATION FOR PARTICIPANTS

The registration deadline for online-registration is at 6th of October.

REGISTRATION FEES

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

Observe that all Swedish participants 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 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.

REGISTRATION FOR EXHIBITORS

The registration deadline for online-registration is at 6th of October.

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

HOTEL LIST

HOTELS IN KISTA

Memory Hotel in Kista
Special offer: 1.600 SEK incl VAT, breakfast buffé, WiFi Internet, spa & gym, sauna and cooling pool, free parking.
Booking code: 469704, can be cancelled 3 days before arriving. PS has reserved 40 rooms between 15-17 Oct., valid until 1st Oct.
Borgarfjordsgatan 3-5, 164 25 Kista
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www.memoryhotel.se

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sales@forenom.se
www.forenom.com/sv/lagenhetshotell/stockholm/forenom-aparthotel-stockholm-kista/285/

Connect Hotel Kista
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connecthotels.se/kista

Scandic Victoria Tower
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victoriatower@scandichotels.com
www.scandichotels.com/victoriatower

Good Morning Kista
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SOME CHEAPER OPTIONS

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(hostel in Gärdet 30 min from KTH by foot or by underground red line, stop "Gardet")
Sandhamnsgatan 59A, 115 28 Stockholm
+46 (0)8 463 22 90 | gardet@stfturist.se
www.svenskaturistforeningen.se

Drotting Victorias Orlogshem
(in Gamla Stan, the old town)
limited number of rooms
Teatergatan 3, 111 48 Stockholm
+46 (0)8 611 0113 | info@orlogshemmet.com
www.orlogshemmet.com

HARALD HAAS
University of Edinburgh, LiFi Research and Development Center, United Kingdom

WHAT IS THE STATUS OF LIFI AND WHAT COMES NEXT?

Professor Harald Haas holds the Chair of Mobile Communications at the University of Edinburgh, and is Founder and Chief Scientific Officer of pureLiFi Ltd. He is also the Director of the LiFi Research and Development Center at the University of Edinburgh. He first introduced and coined LiFi in a TED Global talk in 2011. Subsequently, LiFi was listed among the 50 best inventions in TIME Magazine 2011. His two TED Global talks have been watched more than 5 million times. He has published more than 450 papers which have been cited more than 25,000 times (Google Scholar). His Google Scholar h-index is 76. He has been on the Thomson Reuters list of highly cited researchers in 2017 and 2018. He is co-recipient of numerous best paper awards including three best paper awards consecutively at IEEE ICC between 2016-2018. Professor Haas is Fellow of the Royal Society of Edinburgh, Fellow of the IET, and Fellow of the IEEE. He holds a Royal Society Wolfson Research Merit Award since 2017.

Abstract
The visible light spectrum is 1000 times larger than the entire radio frequency spectrum of 300 GHz, and this simple fact provides the motivation to use the visible light spectrum to augment RF cellular communications. We will set the scene by motivating the need for new wireless spectrum. Then we will go on to provide a general background to the subject of optical wireless communications. We will discuss the relationship between VLC and LiFi, introducing the major advantages of VLC and LiFi and discuss existing challenges. Recent key advancements in physical layer techniques that led to transmission speeds greater than 10 Gbps will be discussed. Moving on, we introduce channel modelling techniques, and show how this technology can be used to create fully-fledged cellular networks achieving orders of magnitude improvements of area spectral efficiency compared to current technologies. The challenges that arise from moving from a static point-to-point visible light link to a LiFi network that is capable of serving hundreds of mobile and fixed nodes will be discussed. An overview of recent standardization activities will be provided – primarily focusing on the new IEEE 802.11bb LC (light communication) Study Group activities. Lastly, we will moot commercialization challenges of this disruptive technology.

PETE VUKUSIC
University of Exeter, School of Physics, United Kingdom

ALL THINGS BRIGHT AND BEAUTIFUL: THE PHOTONICS OF BIOLOGICAL SYSTEMS

Pete Vukusic began Investigating natural structural colour in the University of Exeter School of Physics in 1998. Iridescence and the photonic properties of butterflies and moths was central to the original work but his research has diversified to comprise the photonics of a much broader range of animals and plants. Pete formed and leads the Biological Photonics research group. The group's research is motivated by the goal of fundamentally understanding naturally evolved strategies at work in the manipulation of light by biological systems. Its principle aims comprise development of a critical knowledge base of biological strategies involved in natural photonic system processes and applying it both to improve existing technologies and to design innovative new optical devices.

Abstract
The study of structural colour in brightly coloured animals is an exciting interdisciplinary area of research. Complex photonic bandgap (PBG) structures that occur naturally cross a broad range of animals and plants, suggest broad innovation both in nature's use of materials and in its manipulation of light and colour. In certain butterflies for instance, ultra-long-range visibility of up to one half-mile is attributed to photonic structures that are formed by discrete multilayers of cuticle and air. This contrasts, in other butterfly species, to photonic structures designed more for crypsis and which not only produce strong polarisation effects but can also create additive colour mixing using highly adapted periodicity. Optical systems also exist that employ remarkable 2D and 3D photonic crystals of cuticle to produce partial PBGs, with the effect that bright colour is reflected, or fluorescence emission is inhibited, over specific angle ranges. From the perspective of modern optical technology, these structures arguably indicate a significant functional advance, since in principle, such 2D and 3D periodicities are potentially able to manipulate the flow of light more completely. This presentation will offer an overview, for a more general audience, of this emerging field of study, as well as describing several of the exciting recent discoveries that reflect nature's optical design ingenuity, and some technological applications to which they are currently being applied.

CONFERENCE SCHEDULE

WEDNESDAY, 16 OCTOBER 2019

08:00-09:00 — Room: **Glasgatan**
On-site registration and welcome coffee

09:00-09:15 — Room: **Sal A**
Opening Remarks
Magnus Breidne, PhotonicSweden; Mattias Hammar, Royal Institute of Technology (KTH)

09:15-10:15 — *Session Chair:* Magnus Breidne
Special Award *to*
Sune Svanberg Lund University, Sweden and South China Normal University, China
Interdisciplinary Laser Spectroscopy

Keynote Talk
10:15 - 11:00
What is the Status of LiFi and What Comes Next?
Harald Haas, University of Edinburgh

11:00-12:20 — Room: **Sal A**
Exhibitor Presentations — *Session Chair* Lennart BM Svensson
Exhibitor Pitch Talks

12:20-13:20 — Room: **Puur Restaurant**
Lunch & Poster Session & Exhibition

Room: Sal A

13:20-14:40
Session A1 | Quantum Optics

Session Chair: Mattias Hammar

13:20-13:40
Reconfigurable Quantum Photonic Circuits
Ali Elshaari , Royal Institute of Technology (KTH)

13:40-14:00
Quantum communications based on spatial-division-multiplexing optical fibers
Guilherme Xavier, Linköping University

14:00-14:20
Slow Light Applications
Adam Kinos, Lund University

14:20-14:40
Multiparty Quantum Communication
Mohamed Bourenanne, Stockholm University

Room: Sal B

13:20-14:40
Session B1 | Laser & X-Ray Technology

Session Chair: Mikael Sjödahl

13:20-13:40
Permanently aligned multi-line lasers: A simplified solution for optical integration in biomedical instrumentation and fluorescence microscopes
Melissa Haahr, Product Manager, Cobolt AB, a part of HÜBNER Photonics, Sweden

13:40-14:00
Realtime microstructure analysis with laser ultrasonics for the metal industry
Mikael Malmström, Senior Researcher, Nondestructive Material Characterization at SWERIM AB, Sweden

14:00-14:20
Liquid metal jet and nano focus X-ray sources
Björn Hansson, CEO, Excillum AB, Sweden

14:20-14:40
3D-Tomographic Visualization for the Mining and Exploration Industry, based on X-Ray Photonics
Mikael Bergqvist, R&D Manager, Orexplore AB, Sweden

WEDNESDAY, 16 OCTOBER 2019

14:40 - 15:00 — Room: **Glasgatan**
Coffee break & Poster session & Exhibition

Room: Sal A

15:00-16:20
Session A2 | Nanophotonics - Advanced photonics materials and Manufacturing

Session Chair: Sergei Popov

15:00-15:20
Plasmonic nanospectroscopy and single nanoparticle catalysis
Christoph Langhammer, Chalmers Technical University

15:20-15:40
Magnetic, chemical and electrical steering of light at the nanoscale
Aleksandre Dmitriev, University of Gothenburg

15:40-16:00
Diamond waveguide infrared spectroscopy for applications in life science
Mikael Karlsson, Uppsala University

16:00-16:20
Wood Photonics
Elena Vasileva, Royal Institute of Technology (KTH)

Room: Sal B

15:00-16:20
Session B2 | Optical design & manufacturing

Session Chair: tba

15:00-15:20
Precision Glass Molding of Aspherical Lenses: technology background for optical designers and project engineers
Andreas Kunz, Business Director Advanced Optical Components, FISBA AG, Switzerland

15:20-15:40
Photodetector technology with great potential to be explored in UV, visible and NIR
Mikko A. Juntunen, CEO, ElFys Inc. Finland

15:40-16:00
Photonics in real life applications
Åsa Almström Technical Project Manager Adopticum, Sweden

16:00-16:20
Accelerating Photonics innovation for companies and researchers - ACTPHAST 4.0 and ACTPHAST 4R"
Pentti Karioja, Member of the Technology Coordination Team at ACTPHAST, Principal Scientist, VTT Ltd, Finland

16:20-19:00 — Room: **Glasgatan**
Poster Session & Exhibition

19:00-22:00 — Location: **Puur Restaurant**
Conference dinner

THURSDAY, 17 OCTOBER 2019

08:15 — Room: **Glasgatan**
Welcome coffee

09:00-09:45 — Room: **Sal A**
Keynote Talk
All things bright and beautiful: the photonics of biological systems
Pete Vukusic, University of Exeter, School of Physics, United Kingdom

10:00-11:00 — Room: **Sal A**
PhotonicSweden Awards and Poster Prize
Chair: Mikael Sjödahl, Luleå University, Peter Strömberg, Acoem AB, Gemma Val-Ilosera, Ericsson AB

Room: **Sal A**	Room: **Sal A**
11:00-12:20 **Session A3 | Photonics in Life Science**	11:00-12:20 **Session B3 | Optical Metrology & Communication**
Session Chair: Fredrik Laurell	*Session Chair:* tba
11:00-11:20 Si-nanocrystals, bio-applications *Ilya Sychugov, Royal Institute of Technology (KTH)*	11:00-11:20 Custom Bayer Filter Multispectral Imaging: Emerging integrated technology *Thierry Berthou, Sales Manager, SILIOS Technologies, France*
11:20-11:40 Hybrid plasmonics for heat and radiation sensing *Magnus Jonsson, Linköping University*	11:20-11:40 Optimizing rotary equipment performance with FOS bearings and the SKF Optomnia® software *Lars Kahlman, Senior Application Expert, SKF AB, Sweden*
11:40-12:00 Colloidal QD single-photon emission for medical diagnistic applications *Ying Fu, KTH SciLifeLab*	11:40-12:00 Ultraviolet differential optical absorption spectroscopy with IACM, a unique alkali measuring device for biomass combustion *Tomas Leffler, R&D engineer, Vattenfall AB, Sweden*
12:00-12:20 Ultrasensitive and super-resolution fluorescence spectroscopy and imaging for fundamental biomolecular studies and towards clinical diagnostics *Jerker Widengren, Royal Institute of Technology (KTH)*	12:00-12:20 Industrial control via free space optical communication *Björn Edlund, CEO, Beotop Innovation AB, Sweden*

12:20-13:30 — Room: **Puur Restaurant**
Lunch break & Poster session & Exhibition

THURSDAY, 17 OCTOBER 2019

Room: **Sal A**	Room: **Sal B**
13:30-14:30 **Session A4 | Advanced measurement techniques** *Session Chair:* Håkan Petterson	13:30-14:30 **Session B4 | Vision & Detector Systems** *Session Chair:* tba
13:30-13:50 Scanning near-field optical microscopy: application for GaN-based structures *Saulius Marcinkevicius, Royal Institute of Technology (KTH)*	13:30-13:50 Augmented Reality Head Up Display Optics for Off Highway Vehicles *Esteban Arboix, CEO, Optea AB, Sweden*
13:50-14:10 High power/short pulse laser spectroscopy *Anne L´Huillier, Lund University*	13:50-14:10 MEMS for wireless infra-red gas detection *Britta Fismen, Head of Sensor Technology, GasSecure AS, Norway*
14:10-14:30 THz ellipsometry and the THz optical Hall effect *Philipp Kuhne, Linköping University*	14:10-14:30 IR-Spectroscopic technologies for gas sensing *Pentti Karioja, Principal Scientist, VTT Ltd, Finland*

14:30-15:00 **Glasgatan**
Coffee break

15:00 - 17:30 Room: **Sal A**
Nordic Workgroup Meeting *Session Chair:* Lennart BM Svensson

- ACTPHAST – Accelerating Photonics Innovation for SME's and Research organisations
- Discussion about EU-projects
- EU-Project EPRISE: Go-To-Market And Opportunities Booklet
- The Photonics Research and Innovation flagship funding from the Academy of Finland
- Financing by Smartare Elektroniksystem
- InteBridge-China Europe Innovation Centre Intebridge Capital
- Presentations by start-ups and SME's
- Case study: Collaboration between Vattenfall and academia for improvement of IACM spectroscopy device
- Photonics Innovation Hub (DT-ICT-04-2020) and Materize as photonics ecosystem in Latvia

Lennart BM Svensson, PhotonicSweden
Petra Bindig, PhotonicSweden
Staffan Tjörnhammar, PhotonicSweden
Juha Purmonen, Impact Manager at UEF/Institute of Photonics, Photonics Flagship PREIN
Pentti Karioja, D.Sc. (Tech) - Photonics Integration VTT, Finland)
Esteban Arboix, CEO, Optea AB, Sweden
Tomas Leffler, R&D engineer, Vattenfall AB, Sweden
Yingbo Lin, Executive President at The Nordic Chinese Association for Innovation and Entrepreneurship
Andris Anspoks, Deputy Director for Innovation, Institute of Solid State Physics (ISSP), University of Latvia, Advisor to the Prime Minister for Science and Innovation

17:30-18:30
Networking with refreshments

POSTER PRESENTATIONS

Effective Structural Chirality of Beetle Cuticle Determined from Transmission Mueller Matrices Using the Tellegen Constitutive Relations
Hans Arwin, Linköping University

Line Confocal Imaging Sensors for Industrial Inspection
Murat Deveci, FocalSpec Ltd.

Backward lasing for range-resolved detection of atomic species
Pengji Ding, Lund University

Low-loss MEMS phase shifter for large scale reconfigurable silicon photonics
Pierre Edinger, Royal Institute of Technology (KTH)

Diamond gratings for dielectric laser acceleration
Pontus Forsberg, Uppsala University

Towards more efficient carbon dioxide and carbon monoxide concentration monitoring in cement factories using fibre-optic based gas monitoring systems
Kenny Hey Towa, RISE Fiber Optics

Toward XFEL Chip
Yen-Chieh Huang, National Tsing Hua University, Taiwan

Assessment of Fabrication Techniques for Large Aperture Quasi-Phase-Matched Device in RKTP
Cherry Lee, Royal Institute of Technology (KTH)

Simple semiconductor optical amplifier based tunable fiber laser architectures – innovative usage of chirped fiber Bragg gratings
Robert Lindberg, Royal Institute of Technology (KTH)

Fabrication of Widely Tunable Fiber Bragg Grating Filter Using Fused Deposition Modeling 3D Printing
Chunxin Liu, Royal Institute of Technology (KTH)

Subwavelength Adiabatic Multimode Y-junctions
Longhui Lu, KTH/Huazhong University of Science and Technology

Laser-based additive manufacturingof transparent fused silica glass
Pawel Maniewski, Royal Institute of Technology (KTH)

THz time-domain reflection spectroscopy of KTiOPO4
Kjell Martin Mølster, Royal Institute of Technology (KTH)

Postprocessing of semiconductor-core fibers -low loss waveguides and compositional microstructures
Korbinian Muehlberger, Royal Institute of Technology (KTH)

Recent progress in RKTP waveguides
Patrick Mutter, Royal Institute of Technology (KTH)

High-voltage fiber sensor based on fiber Bragg grating in poled fiber
Joao Pereira, RISE

Discrete and silicon-integrated InP-based photonic-crystal surface-emitting lasers
Carl Reuterskiöld Hedlund, Royal Institute of Technology (KTH)

Central and Peripheral Image Quality of the Human Eye
Dmitry Romashchenko, Royal Institute of Technology (KTH)

Simultaneous temporally and spectrally resolved Raman coherences with single-shot fs/ns rotational CARS
Maria Ruchkina, Lund University

Tunable flat magnetic lens
Georgii Shamuilov, Uppsala University

Performance Simulation and Function Analysis in Photoacoustic Tomography
Jiaqi Shi, Linköping University

Heteroepitaxy of Orientation-patterned GaP on GaAs Templates for Frequency Conversion Applications
Axel Strömberg, Royal Institute of Technology (KTH)

Micro- and Nanostructured TiO2 Nanoparticles-Based Optical Coatings for LED and Solar Cell Applications
Dennis Visser, Royal Institute of Technology (KTH)

Intra-Cavity Up-Conversion Photon Counting Mid-Infrared Range Determination
Max Widarsson, Royal Institute of Technology (KTH)

Mueller Matrix Spectroscopic Tomography of Inhomogeneous Anisotropic Media
Qulei Xu, Linköping University

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