

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

Kista, Stockholm at Electrum



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
- Fredrik Laurell, KTH
- Mikael Lindgren, LiU
- Ewa Orłowska, Hamamatsu AB
- Håkan Pettersson, Lund Universitet
- Sergei Popov, KTH
- Mikael Sjö Dahl, LTU
- Gemma Vall-Llosera, Ericsson

- Christopher Dirdal, SINTEF A/S
- Krister Fröjd, Proximion AB
- Tobias Hedqvist, Laser 2000 GmbH
- Larz Ignberg, Triple Steelix
- Kenth Johansson, Stiftelsen Adoptikum
- Ewa Orłowska, 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 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 <i>(incl. one person participation fee)</i> |
| 13.600 kr + 25% VAT | Company Members of PhotonicSweden <i>(incl. one person participation fee)</i> |
| 2.600 kr + 25% VAT | additional exhibitors colleagues <i>(incl. one person participation fee)</i> |

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

+46 (0)8 793 07 00 | hotel@memoryhotel.se

www.memoryhotel.se

Forenom Aparthotel Stockholm Kista

Torshamnsgatan 32, 164 40 Kista

+46 (0)8 40 95 61 00

sales@forenom.se

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

Connect Hotel Kista

Isafjordsgatan 7, 164 40 Kista

+46 (0)8 42 00 3000 | kista@connecthotels.se

connecthotels.se/kista

Scandic Victoria Tower

Arne BeurlingsTorg 3, 164 40 Kista

+46 (0)8 517 533 00

victoriatower@scandichotels.com

www.scandichotels.com/victoriatower

Good Morning Kista

Finlandsgatan 7, 164 74 Kista

+46 (0)8 594 606 40 | kista@gmorninghotels.se

ligula.se/goodmorninghotels/kista

Stay XtraHotel

Helsingforsgatan 27-29, 164 78 Kista

+46 (0)8 271 270 | info@stayxtra.com

stayxtra.com

ScandicKista

Färögatan 9, 164 40 Kista

+46 (0)8 517 388 00 | kista@scandichotels.com

www.scandichotels.se/hotell/sverige/stockholm/scandic-kista

HOTELS IN STOCKHOLM

Elite Hotel Arcadia

Körsbärsvägen 1, 114 23 Stockholm

+46 (0)8 566 215 00 | reservation.arcadia@elite.se

Reservations +46 (0)771 788 789

www.elite.se

Best Western Time Hotel

Vanadisvägen 12, 113 46 Stockholm

+46 (0)8 545 473 00 | reservations@timehotel.se

www.timehotel.se

Best Western Hotel Karlaplan

Skeppargatan 82, 114 59 Stockholm

+46 (0)8 31 32 20 | info@hotelkarlapan.se

www.hotelkarlapan.se

Clarion Collection Hotel Tapto

Jungfrugatan 57, 115 31 Stockholm

+46 (0)8 664 50 00

www.clarionhotel.com/hotel-stockholm-sweden-SE018

Scandic Park

Karlavägen 43, 114 31 Stockholm

+46 (0)8 517 348 00 | park@scandichotels.com

www.scandichotels.com

Hotel Birger Jarl

Tulegatan 8, 113 53 Stockholm

+46 (0)8 674 18 00 | info@birgerjarl.se

www.birgerjarl.se

Clas The Corner Hotel & Inn

Surbrunnsgatan 20, 113 48 Stockholm

+46 (0)8 16 51 36 | info@claspahornet.se

claspahornet.se

SOME CHEAPER OPTIONS

STF Gärdet

(hostel in Gärdet 30 min from KTH by foot or by underground red line, stop "Gärdet")

Sandhamnsgatan 59A, 115 28 Stockholm

+46 (0)8 463 22 90 | gardet@stfturist.se

www.svenskaturistforeningen.se

Drottning 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

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
Exhibitor Pitch Talks Lennart BM Svensson

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

Room: **Sal A**

Room: **Sal B**

13:20-15:00
Session A1 | Quantum Optics

Session Chair: tba

13:20-13:40
Reconfigurable Quantum Photonic Circuits
Ali Elsahaari, 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
tba
Mohamed Bourenanne, Stockholm University

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

Session Chair: tba

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

14:00-14:20
Realtime microstructure analysis with laser ultrasonics for the metal industry
Mikael Malmström, Senior Researcher, Nondestructive Material Characterization at SWERIM AB, Sweden

14:20-14:40
tba

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

WEDNESDAY, 16 OCTOBER 2019

Room: **Sal A**

15:00-16:20

Session A2 | Nanophotonics - Advanced photonics materials and Manufacturing

Session Chair: tba

15:00-15:20

Plasmonic nanospectroscopy and single nanoparticle catalysis
Christoph Langhammer, Chalmers Technical University

15:20-15:40

Spintronic, nano-plasmonic
Aleksandr 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**

14:20-16:20

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

tba

15:40-16:00

Photonics in real life applications
Åsa Almström Technical Project Manager Adapticum, 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

Poster Session & Exhibition

Room: **Glasgatan**

19:00-22:00

Conference dinner

Location: **Puur Restaurant**

CONFERENCE SCHEDULE

THURSDAY, 17 OCTOBER 2019

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

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
Chair: Mikael Sjö Dahl, Luleå University, Peter Strömberg, Acoem AB

Room: **Sal A**

Room: **Sal A**

11:00-12:20
Session A3 | Photonics in Life Science

Session Chair: tba.

11:00-11:20
Si-nanocrystals, bio-applications
Ilya Sychugov, Royal Institute of Technology (KTH)

11:20-11:40
Organic photonics, Nanoplasmonic biosensor systems
Magnus Jonsson, Linköping University

11:40-12:00
Colloidal QD single-photon emission for medical diagnostic applications
Ying Fu, KTH SciLifeLab

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)

11:00-12:20
Session B3 | Optical Metrology

Session Chair: tba

11:00-11:20

11:20-11:40
Optimizing rotary equipment performance with FOS bearings and the SKF Optomonia® software
Lars Kahlman, Senior Application Expert, SKF AB, Sweden

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
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**

13:30-14:50
Session A4 | Advanced measurement techniques

Session Chair: tba

13:30-13:50
 Scanning near-field optical microscopy: application for GaN-based structures
Saulius Marcinkevicius, Royal Institute of Technology (KTH)

13:50-14:10
 High power/short pulse laser spectroscopy
Anne L'Huillier, Lund University

14:10-14:30
 THz ellipsometry and the THz optical Hall effect
Philipp Kuhne, Linköping University

14:30-14:50
 Fiber lasers for controlling and detecting cold atoms
Björn Hessmo, Royal Institute of Technology (KTH)

14:50-15:10 Room: **Sal A**
Closing Remarks & Farewell
 Mattias Hammar

15:10
Lab Visits

tba.

13:30-14:50
Session B4 | Vision & Detector Systems

Session Chair: tba

13:30-13:50
 Augmented Reality Head Up Display Optics for Off Highway Vehicles
Esteban Arboix, CEO, Optea AB, Sweden

13:50-14:10
 MEMS for wireless infra-red gas detection
Britta Fismen, Head of Sensor Technology, GasSecure AS, Norway

14:10-14:30
 IR-Spectroscopic technologies for gas sensing
Pentti Karioja, Principal Scientist, VTT Ltd, Finland

14:30-14:50
 tba

15:10 - 17:00
Nordic Workgroup Meeting

- 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

Lennart BM Svensson, PhotonicSweden
Petra Bindig, PhotonicSweden
Staffan Tjörnhamar, PhotonicSweden
Juha Purmonen, Photonics Finland
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