NETLAS NEWSLETTER 5-2022

NETLAS PhD Student Haris Ashraf's experience during his secondment at Superlum Diodes, Ireland

Host: Technical University of Denmark (DTU)

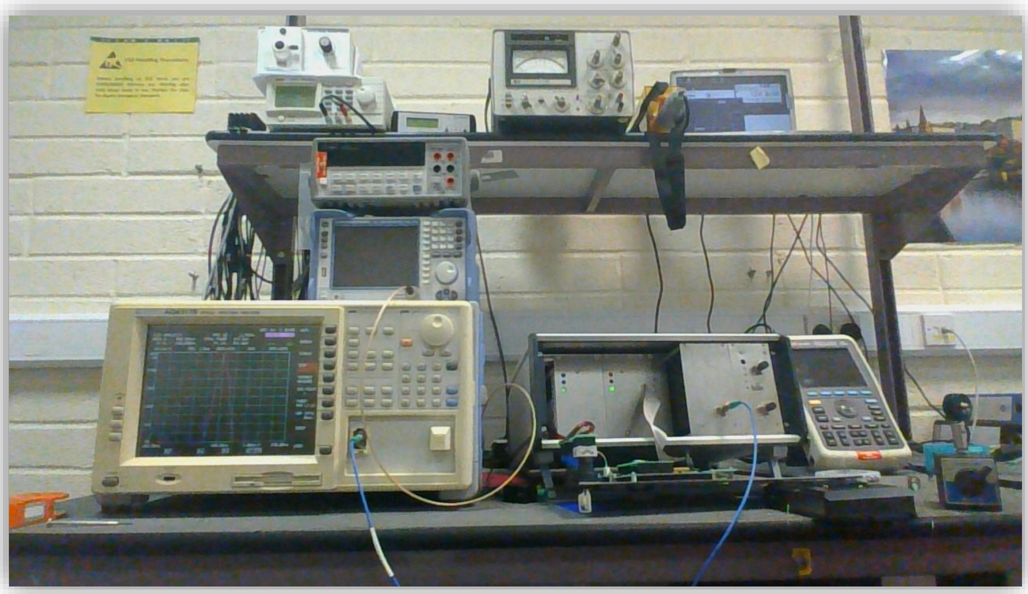
Secondment Period: 31st March 2022 – 15th April 2022

PhD Project: Ultra-narrow linewidth swept sources at 850 nm based on acousto-optical tunable filter (AOTF) technology

*"The initial plan was to gain hands on experience working with AOTF Tunable Laser, understand the basic concepts and underlying challenges. **Superlum Diodes** is a leading company in manufacturing superluminescent diodes and modules and having an opportunity to get training directly from them was a wonderful experience.*

It was a thorough training where I started from learning the basics of AOTF based Tunable Laser, its working principle, tuning mechanism, design parameters, and much more. During my stay there, I acquired the skills of testing and characterizing some important parameters of laser, for example, variation in tuning range as a function of SOA current, determining the instantaneous linewidth of laser (FWHM), mode spacing, side mode suppression ratio, static coherence length (CL), effect of intra-cavity SOA-current on FWHM and CL.

I would like to mention and thanks to Dr. Alexander Chamorovskiy who trained me during my entire stay at Superlum. He also showed me the internal structure of the laser and guided me how to assemble such a laser. Overall, it was an amazing experience. After this training, I will continue my research on this laser at DTU".



Superlum building and lab – photos @Haris Ashraf

Cork City - photos @Haris Ashraf

Prof Marinko's visit the Applied Optics Group!

Thursday 21st April 2022, Prof Marinko visited the AOG and gave a talk about his recent developments in the OCT field with a special interest in how to take advantage of Artificial Intelligence (AI) with OCT Angiography.

From left to right: Rasmus Eilkaer (Technical University of Denmark- DTU), Julien Camard, Rene Riha (NETLAS PhD Student), Adrian Fernandez, Dr George Dobre, Alejandro Martinez (NETLAS PhD Student), Prof Adrian Podoleanu, Esteban Proano (NETLAS PhD Student), Prof Marinko, Dr Manuel Marques, Irene Rodriguez (NETLAS PhD Student), Giannis Nteroli, Gopika Venugopal (NETLAS PhD Student), and Dr Adrian Bradu

Title: OCT Angiography and AI for Diabetic Retinopathy

Abstract: Diabetic Retinopathy (DR) is one of the leading causes of vision loss in working age adults. The pathological changes to the retina, the light sensitive tissue at the back of the eye, due to DR can be imaged with optical coherence tomography (OCT), and the microvasculature visualized with OCT Angiography (OCTA). Artificial intelligence (AI) tools to analyse the OCT intensity and OCTA flow contrast image data may assist with the classification of DR and has potential to identify early changes that may be predictive of disease severity. Read More

AWARD for University of Kent and NETLAS Associated Partner Moorfields Eye Hospital, London: NIHR i4i award received for first-time retinal surgery robot

Researchers from the School of Biomedical Engineering & Imaging Sciences, in collaboration with **University of Kent and Moorfields Eye Hospital**, have received a £1.5M award from the National Institute for Health Research (NIHR), the research partner of the NHS, public health and social care, for their robotic system designed to deliver regenerative therapies to the human retina.

> “ *An exciting collaboration engaging UK expertise straddling physics, biomedical engineering, robotics, ophthalmology and surgery will be supported by the NIHR. Led by King's College London, this consortium aims to address one of the major limitations of regenerative therapy in delivery of drugs and cells to exact locations in the retina.*
>
> – Co-Investigator, Professor Adrian Podoleanu, University of Kent

> “ *Success has already been demonstrated for certain types of stem cell therapies, including based on a seminal clinical study by our team at Moorfields. There is now evidence that degenerative eye diseases may be reversable with new therapies. However, these must be precisely delivered. With our proposed robotic system the success of novel therapies will not be held back by limitations in conventional retinal surgery techniques.*
>
> – Prof Lyndon da Cruz from Moorfields Eye Hospital, Project clinical co-lead

The proposed snake-like robotic system will be equipped with force sensing and imaging capabilities to boost the performance of surgeons and fulfil the most challenging precision requirements. Read More

AOG Journal Club

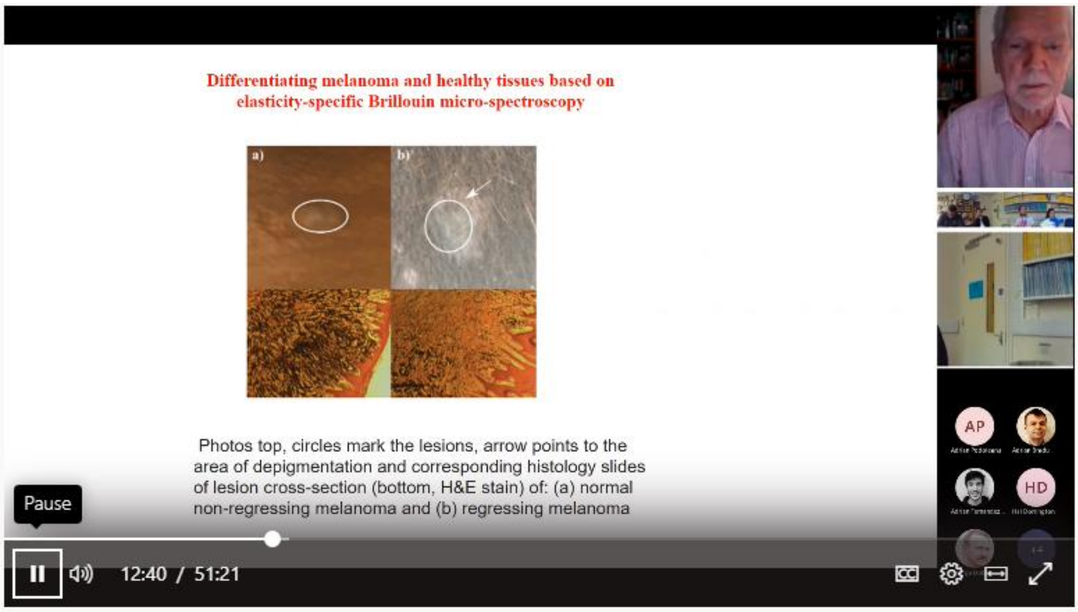
Presentation by Prof. David A Jackson,
FInstP, FOSA
Emeritus Professor of Applied Optics

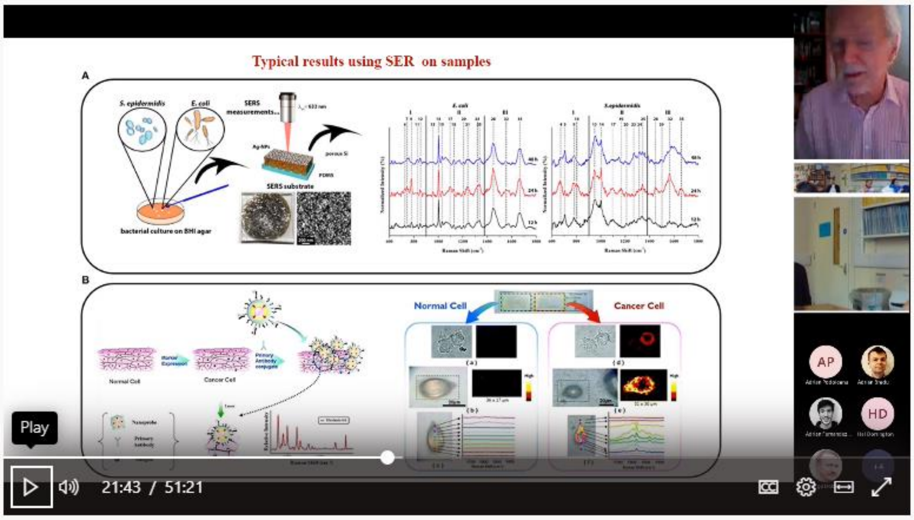
Friday 06/05/2022 at 12 pm

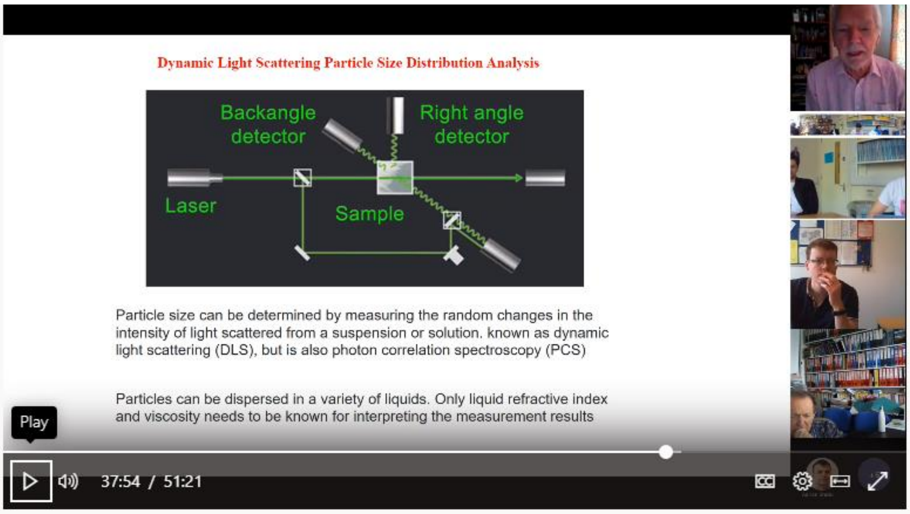
Potential optical techniques that could be useful for medical and other applications

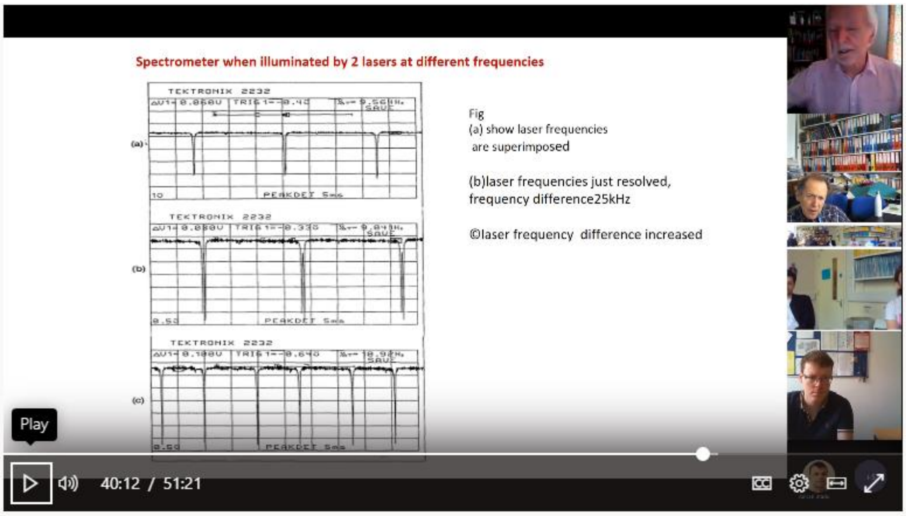
1 Polarization azimuth control based on High-bi fibre
2 Optical spectrum analyser
3 Optical frequency oscillator
4 Brillouin micro-spectroscopy
5 Raman and SERs for cancer studies
6 Dynamic light scattering

A few slides from Prof. Jackson's presentation are presented below









A few slides from Prof. Jackson's presentation

AOG Journal Club

Presentation by NETLAS PhD Student
Alejandro Martinez Jimenez

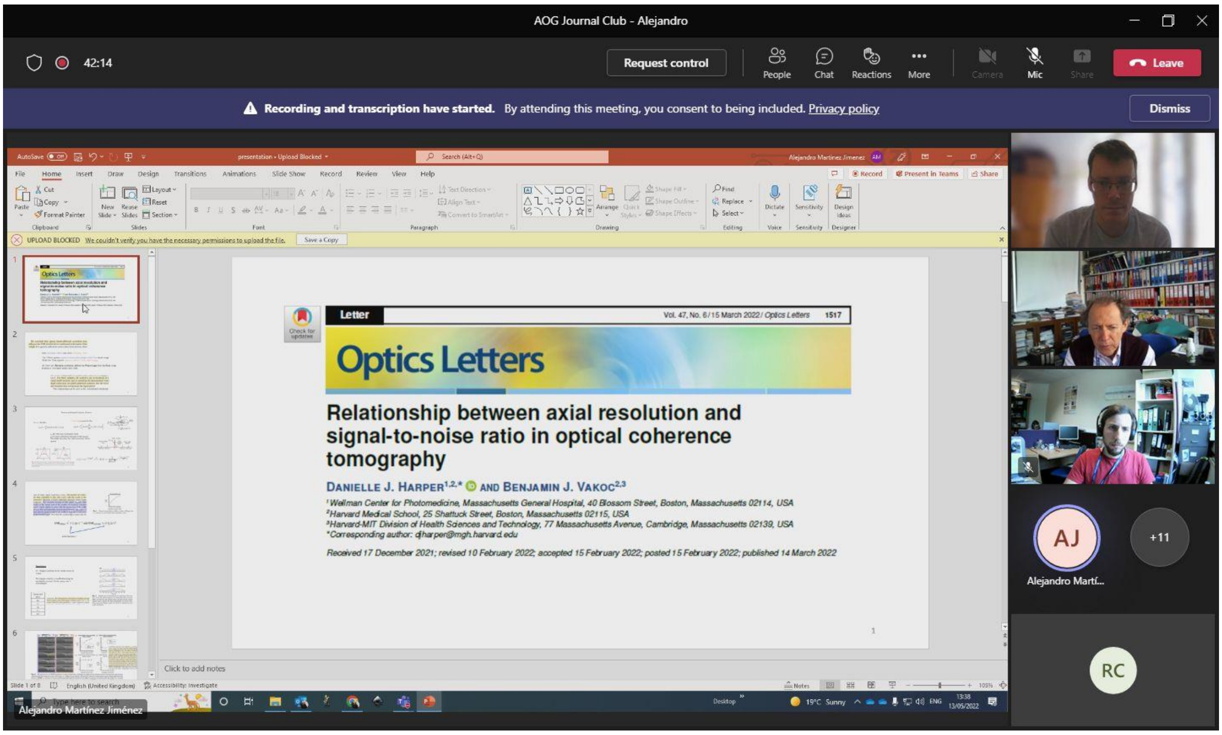
Friday 13/05/2022 at 1 pm

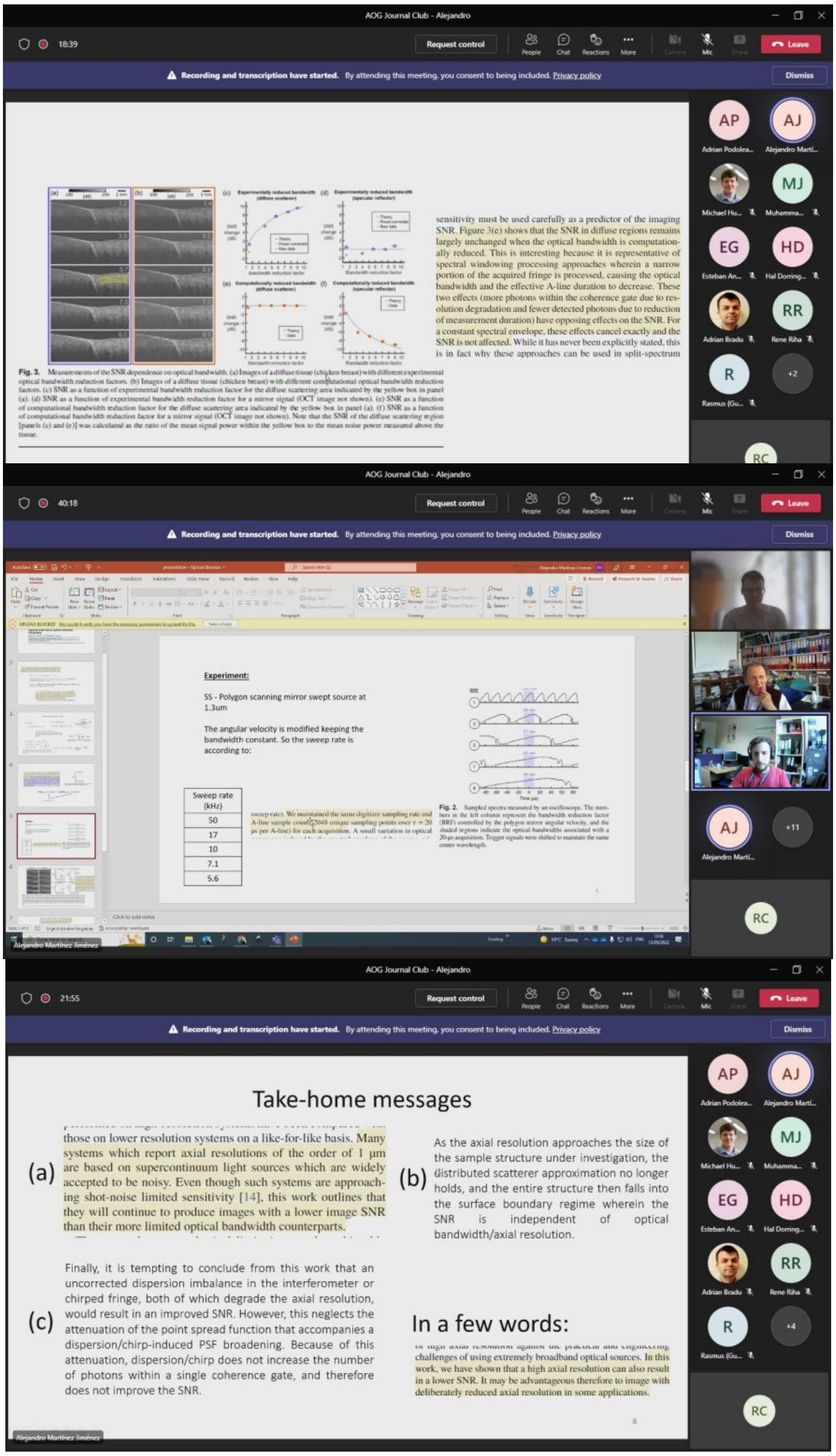
Paper presented:

Relationship between axial resolution and signal-to-noise ratio in optical coherence tomography

https://opg.optica.org/ol/abstract.cfm?uri=ol-47-6-1517

A few slides from Alejandro's presentation are presented below.





A few slides from the NETLAS PhD Student Alejandro Martinez Jimenez's presentation

AOG Seminar

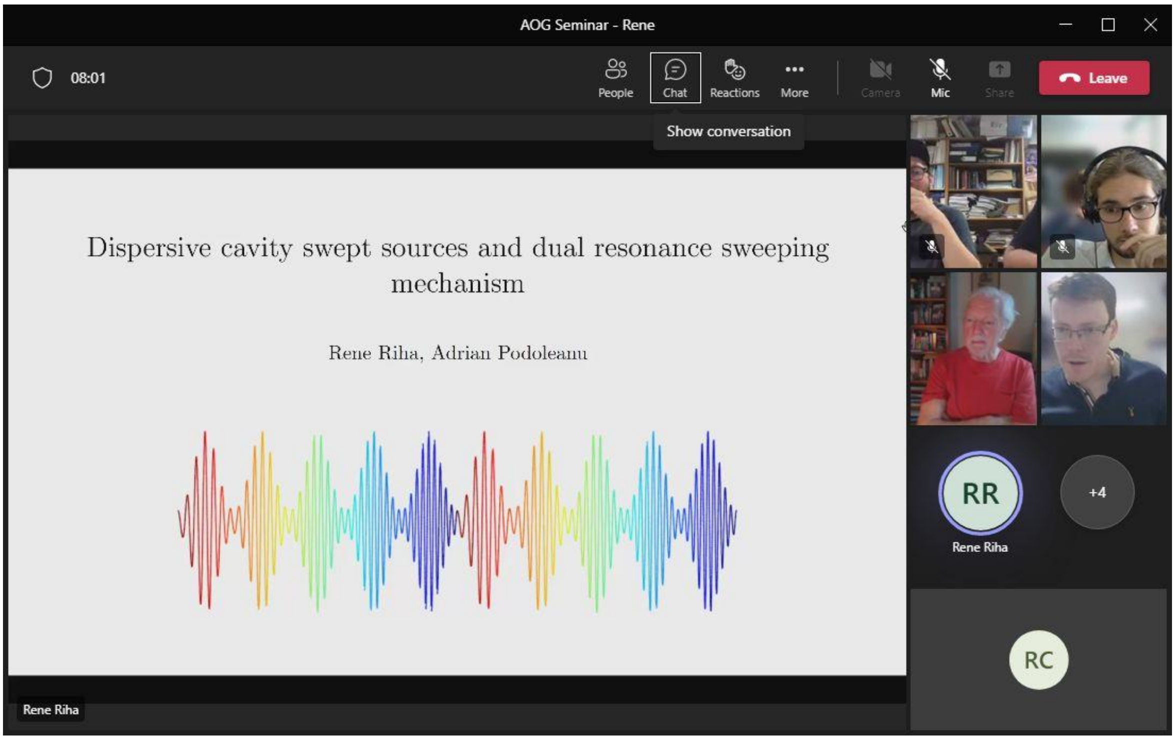
Presentation by NETLAS PhD Student
Rene Riha

Friday 20/05/2022 at 12 pm

Presentation Title: **Dispersive cavity swept sources and dual resonance sweeping mechanism**

Summary: Principles of dispersive cavity akinetic swept sources for OCT were explained to AOG staff at Kent. State of art in research on this type of swept source was presented and a dual resonance sweeping mechanism developed at Kent introduced. A paper was recently submitted to Optics Letters employing this mechanism in the 1550 nm range. Recent results in the 1060 nm setup were also shown with a wavelength tuning range of 40 nm at 1.7 MHz sweep rate.

A few slides from Rene's presentation are presented below.



A few slides from the NETLAS PhD Student Rene Riha's presentation

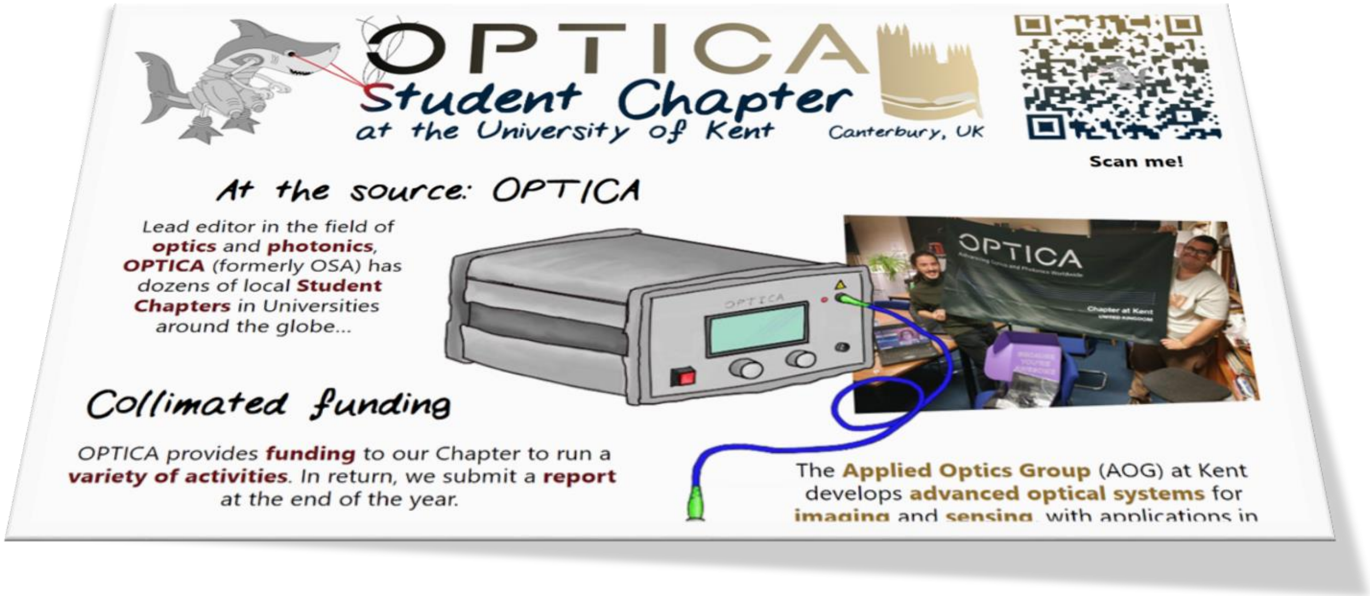
International Day of Light – 16th May 2022 at Kent University

International Day of Light is celebrated on May 16th each year, the anniversary of the first successful operation of the laser in 1960 by physicist and engineer Theodore Maiman. The International Day of Light was proclaimed at the General Conference of UNESCO in November 2017.

According to laserfest.org, Theodore Maiman developed the first working laser at Hughes Research Lab in 1960, and his paper describing the operation of the first laser was published in "Nature" magazine three months later.

With the occasion of the International Day of Light, NETLAS PhD Students from Kent University **Applied Optics Group (AOG)** Alejandro Martinez Jimerez, Gopika Venugopal, Rene Riha, together with NETLAS PhD Students Esteban Andres Proano Grijalva (**Technical University of Denmark**) and Irene Rodriguez Lamoso (**Technical University of Darmstadt,** Germany), students currently during their secondments at Kent University, and Sacha Grelet (**NKT Photonics** Denmark), have initiated a poster session, collaborated and prepared together a poster entitled "Swept Source Technologies at Kent". They displayed the poster in the foyer area of Ingram building together with other scientific posters.

In addition, Alejandro Martinez Jimerez (President of Optica student chapter at Kent University) and AOG PhD Students Adrian Fernández Uceda and Julien Camard made and displayed another poster entitled "Optica chapter at the University of Kent". Different students have prepared posters with little concepts on light and its deep application, all related to their research topics.



Top part of the posters made by NELTAS and AOG Students displayed in Ingram building with the occasion of the International Day of Light – 16th May 2022

In the photo, from left to right: **Manuel Marques, Marie Klufts, Julien Camard, Adrian Fernandez, Irene Lamoso, Prof. Adrian Podoleanu, Rasmus Eilkær Hanse, Esteban Andres Proano, Alejandro Martinez, Rene Riha, Gopika Venugopal and Ramona Cernat.**

If you want to zoom in and have a close look on the posters, please see them attached just below:

Optica Student Chapter - Who are we?Download

Diffraction Slide by Andy ThrappDownload

LASER by Matej Spacek Download

Microneedles by Rachel Sully Download

With this initiative, Optica Student Chapter administration intended to make the student chapter known to the other students at the University of Kent: they are more than welcome to visit us and join our activities.

International Day of Light – 16th May

International video production:
Light – a spectrum of opportunities

Dr. Danuta Sampson: Senior Research Fellow at the UCL and Surrey University, United Kingdom.

"Please find below the link to our international video production: **Light – a spectrum of opportunities.** The video will go public at 10 am on 16th May (UK time)".

https://youtu.be/XxHYR-A68FA

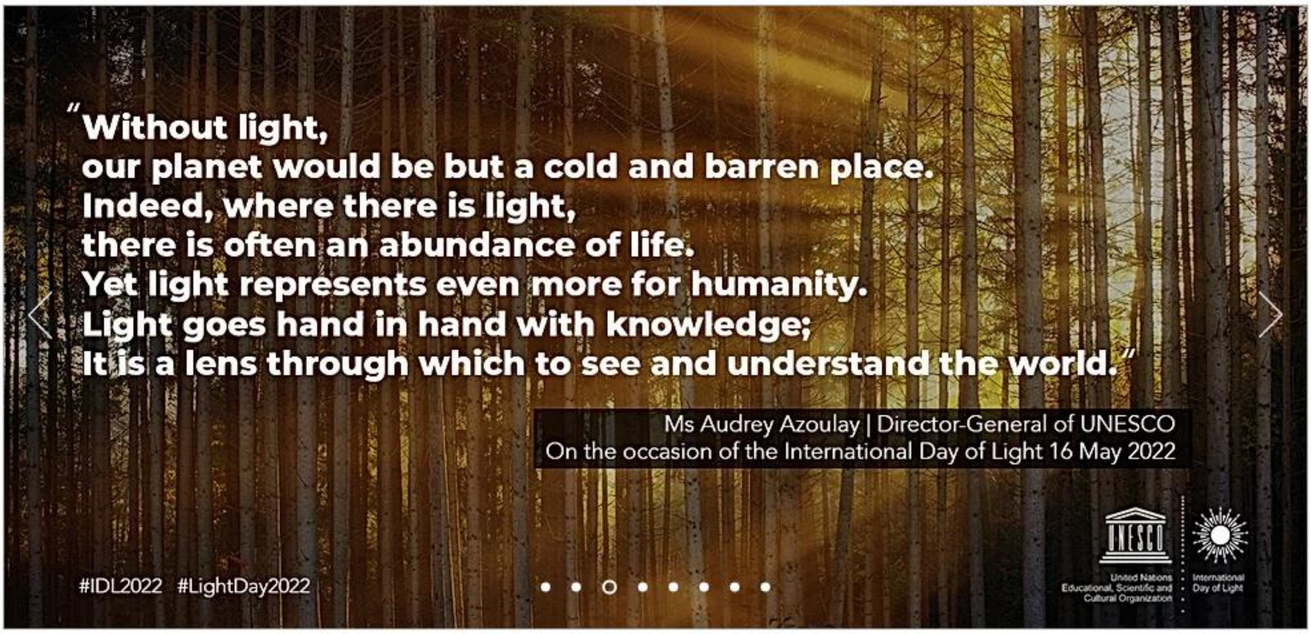
"Light is everywhere. Light, optics, and photonics impact almost every aspect of our lives; from entertainment to medicine, communications, energy, agriculture, art, and culture. In this short video, we summarize it. We hope you will like it and become inspired by Light; its beauty and its endless presence in our lives".

NetLaS

OPTICS & PHOTONICS NEWS

Celebrating LightDay 2022

The International Day of Light, observed annually on 16 May, is a unique opportunity to celebrate the incredible ways that light science impacts people's lives. To commemorate this important day, Optics and Photonics News has put together several stories from this year that showcase how light science is driving advances across applications in sustainable development, clean energy, health care, communications infrastructure, astronomy, cultural preservation and more.



International Day of Light (lightday.org)

For interest, you can find here some of the laser history, but note that the International Day of Light is not just about lasers and science. It also includes aspects of art, culture, entertainment – everywhere light is present in fact!

The 2022 Daylight Award

The Daylight Award honors and supports daylight research and daylight in architecture.

It acknowledges and encourages scientific knowledge and practical application of daylight, which interlink disciplines that are usually addressed in separated, monocultural spheres, professional circles, or practices. The Daylight Award strives to raise a holistic understanding of daylight and increase its positive impact on life.
The 2022 laureates were announced on the UNESCO International Day of Light, 16 May 2022.

Laureates - The Daylight Award

THE DAYLIGHT AWARD 2022 — DAYLIGHT IN ARCHITECTURE

YVONNE FARRELL and

SHELLEY MCNAMARA

THE DAYLIGHT AWARD 2022 — DAYLIGHT RESEARCH

ANNA WIRZ-JUSTICE

AOG University of Kent – Company visit: CAIRN Research in action

Amongst the many activities of the OPTICA Student Chapter at the University of Kent, company visits are important educative events. Hence, it is always a great opportunity to pay a visit to one of the closest companies to Canterbury, such as the CAIRN Research.

The company chairman, Dr Martin Thomas, recently visited the AOG labs, and following our conversation, the PhD Students initiated a visit to his company.

On 23rd May 2022 NETLAS and AOG PhD Students organized themselves and split in small groups to fit in three cars and went to the company located in Faversham Kent.

In the photo, from left to right: Irene Lamoso, Rasmus Eilkær Hanse, Manuel Marques, Alejandro Martinez, Hal Darrington, Rene Riha, Marie Klufts, Adrian Fernandez, Esteban Andres Proano Grijalva, Gopika Venugopal, Julien Camard and the company director Dr Martin Thomas

Dr Martin Thomas guided the group into his labs, presenting us how the company settled in Kent and how they adapted to the fast evolving demands of the industry.

Jez Graham, CEO of Cairn Research, showed us some of the products that they developed for their customers. Completely customized products for their customers. Focus was set on two sets of products:

***Specialised microscopes.** Through interaction with the customer base the company realised that many advanced microscope modalities are simply too versatile. Customers might only need 1 or 2 features of a microscope that offer a wide range of applications. As a result, Cairn Research has started offering microscopes that only do exactly what the specific customer needs, which means they are better at these specific tasks while being much more user friendly.

***Rotating filter wheels.** In some multispectral applications, the ability to shift between colours quickly and reliably is important. For this Cairn has developed co-rotating filter wheels. The co-rotating filter wheels offer two great advantages over a single filter wheel; by leaving a single hole empty in both wheels more colours can be used simultaneously, and the co-rotating property means that the instrument can balance its own torque.

It is encouraging for the PhD students that such interesting industrial research takes place so close to the university. It seems like it was a great adventure!

CAIRN Research [twit on 23rd May 2022]

We really had a great experience during the visits, fascinating tools are the ones that they have. We wish them all prosperity and success in the following years! Hope that we can collaborate more in the future and see more of our PhD Students working in your company!

Professor Adrian Podoleanu Career Celebration conference Canterbury 26-27 May 2022

We are delighted to announce that an event took place in Canterbury, UK, on Thursday 26 (afternoon) and Friday 27 May (all day), to celebrate Prof Adrian Podoleanu's career achievements to date.

Program of the event and other information can be found here

http://cc22.aogkent.uk/

The event started with a recorded video by the Vice-Chancellor of University of Kent Prof. Karen Cox, followed by **Prof David Jackson's** summary of the early days of AOG [FInstP, FOSA, Emeritus Professor of Applied Optics, former head of AOG (1965-2005)] and **Prof Philippe de Wilde,** professor of artificial intelligence (former Deputy Vice-Chancellor for Research & Innovation at the University of Kent 2014 – 2020).

The conference program *welcomed 10 keynote speakers*: **Prof Maciej Wojtkowski**, Institute of Physical Chemistry, Polish Academy of Sciences, Poland, **Prof Richard Rosen** New York Eye and Ear Infirmary of Mount Sinai, USA, **Prof Jannick Rolland** University of Rochester, USA, **Prof Robert Huber** Universität zu Lübeck, Germany, **Prof Christoph Hitzenberger**, Medical University of Vienna, Austria, **Prof Stephen Matcher** University of Sheffield, UK , **Prof Meda Negruţiu,** Victor Babeş University of Medicine and Pharmacy, Romania, **Prof Ole Bang** Technical University of Denmark, **Prof Robert Zawadzki** University of California, Davis, USA , and **Prof David Sampson** University of Surrey, UK.

The event also welcomed great speakers coming either in person or online from different parts of the world: **Dr Radu-Florin Stancu,** University of Kent, UK, **Dr Maria-Alexandra Păun** Swiss Federal Institute of Technology (Lausanne), Switzerland, **Prof Fabrizio Frezza** Sapienza University of Rome, Italy, **Dr Bettina Heise,** Research Center for Non-Destructive Testing (Linz), Austria**, Prof Claudia Coțca,** Washington Institute for Dentistry & Laser Surgery, USA, **Dr Peter Munro,** University College London, UK, **Dr Andrew Thrapp** Wellman Center for Photomedicine, Harvard Medical School, USA, **Dr Yong Hu** iCare, Italy, **Prof Humberto Michinel,** Universidad de Vigo, Spain, **Prof Nigel Mason** University of Kent, UK, **Dr Chao Wang,** University of Kent, UK, **Prof Kirill Larin** University of Houston, USA, **Dr Carla Rosa,** University of Porto, Portugal, **Prof Crina Cojocaru** Polytechnic University of Catalonia, Spain, **Dr Jingyu Wang** University of Oxford, UK, **Prof Cosmin Sinescu** Victor Babeș University of Medicine and Pharmacy, Romania, **Prof Adrien Desjardins** University College London, UK, **Prof Aristide Dogariu** CREOL, The College of Optics and Photonics, USA, **Natalie Tuchapsky/Dr Vladimir Shidlovski** Superlum Ireland, **Prof Kamran Avanaki** University of Illinois Chicago, USA, **Prof. Marinko Sarunic** Moorfields Eye Hospital / University College London, UK, **Prof Sherif Sherif** University of Manitoba, Canada**, Prof Irina Larina** Baylor College of Medicine, Houston, USA, **Prof Gabriel Popescu** University of Illinois at Urbana Champaign, USA, and **Prof Mircea Guina** Tampere University, Finland.

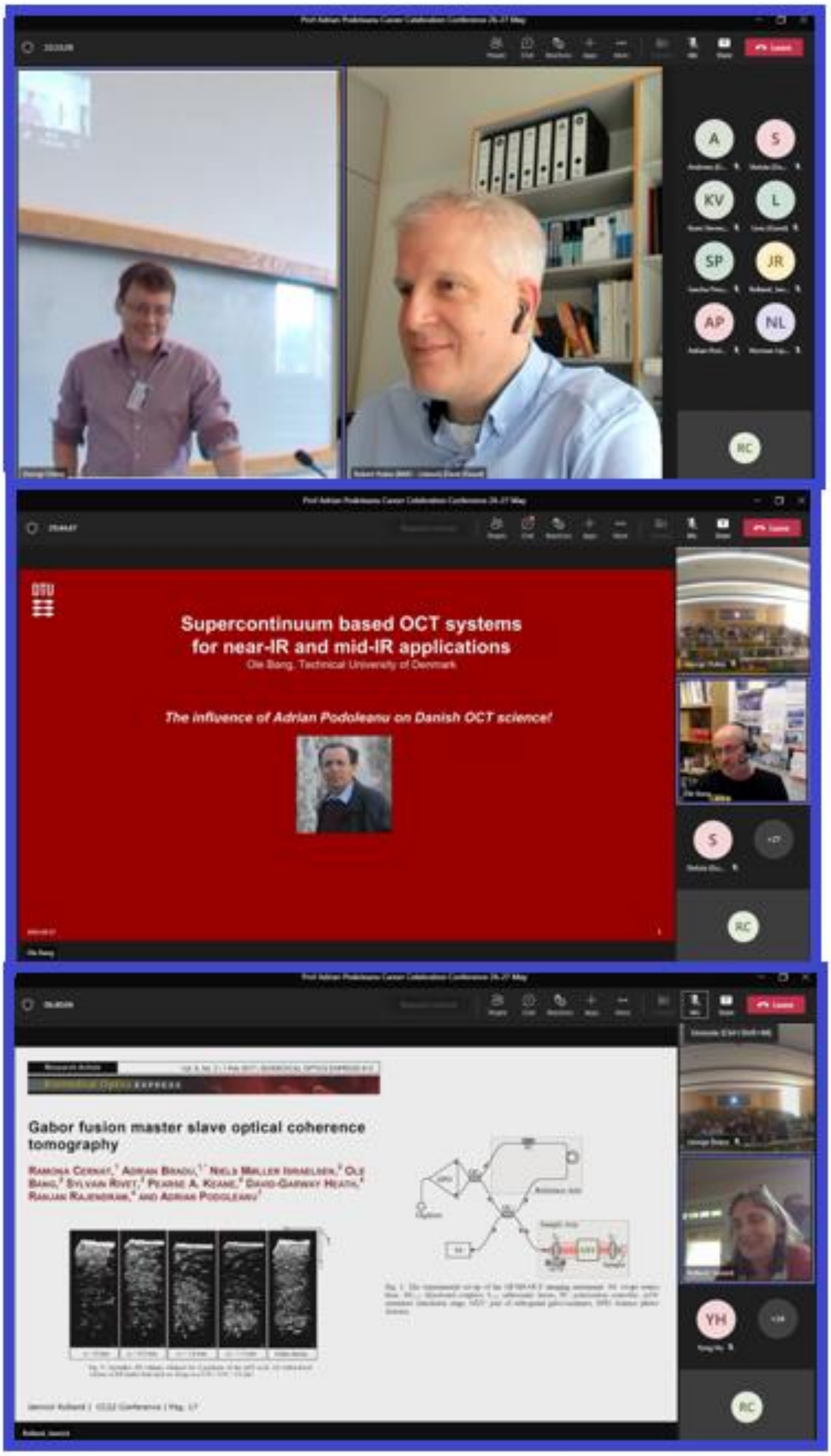
The conference was divided in 9 sessions and had a dedicated time for poster presentations on Thursday 26th May. NETLAS PhD students attending the event in person had the following poster presentations:

- Irene Rodriguez Lamoso, Technical University of Darmstadt: *"High-Tunable Fabry–Pérot MEMS-filters and MEMS-VCSEL for OCT applications"*,
- Rene Riha, University of Kent: "*Dispersion tuned akinetic swept source*"
- Gopika Venugopal, University of Kent: *"Development of 850 nm Galvo Scanner based Swept Source for Full Field OCT"*
- Sacha Grelet, NKT Photonics: "*Fast Akinetic Swept Source for Optical Coherence Tomography* "
- Marie Klufts, Institute of Biomedical Optics, Universität zu Lübeck: "*840nm FDML Laser*"

- Alejandro Martínez Jiménez, University of Kent: *"Time stretch laser technology for OCT"*
- Esteban Andres Proano Grijalva, Technical University of Denmark (DTU): *"Electrically Pumped MEMS VCSEL for OCT "*
- Philipp Tatar-Mathes, Tampere University: *"Membrane external-cavity surface-emitting lasers (MECSELs): A light source for vis-OCT"*

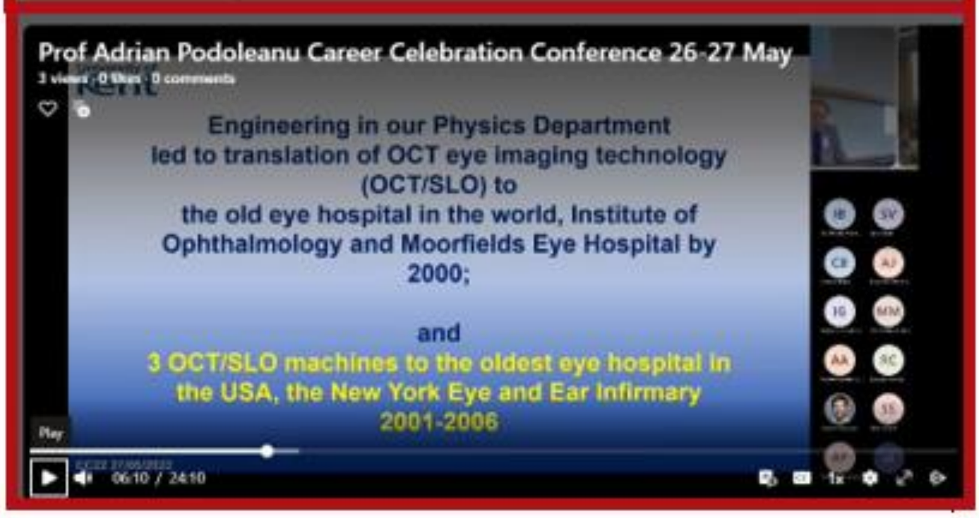
Photo conference day 1: 26th May

Photo conference day 2: 27th May



Print screens taken during the event

Photos and print screens taken during the event



Photos and print screens taken during the event

PUBLICATIONS

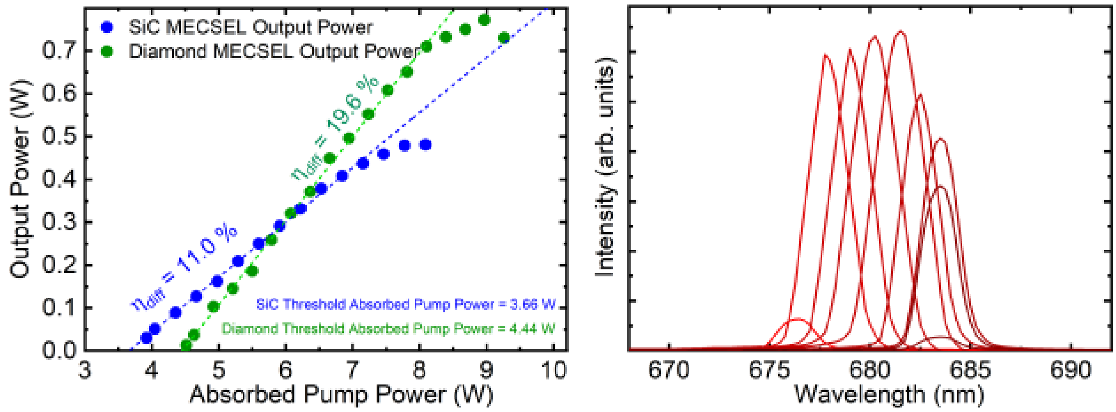
Towards red-emitting MECSELs for visible-light OCT applications

Philipp Tatar-Mathes, Hoy-My Phung, Aaron Rogers, Patrik Rajala, Sanna Ranta, **Hermann Kahle, Mircea Guina**

Proceedings Volume 12170, Advances in 3OM: Opto-Mechatronics, Opto-Mechanics, and Optical Metrology; 1217003 (2022)
https://doi.org/10.1117/12.2592919
Event: Advances in 3OM: Opto-Mechatronics, Opto-Mechanics, and Optical Metrology, 2021, Timisoara, Romania

ABSTRACT

We demonstrate our latest work towards a red-emitting semiconductor membrane external-cavity surface-emitting laser (MECSEL) for applications in OCT. This light source technology employs both a near-diffraction limited beam profile (M2 ≥ 1.05) and a broad tuning range at tailorable emission wavelength. Due to their potential for mass production, combined with the usage of broadly available CMOS-sensors as detector units, OCT imaging device costs can be reduced to a significant amount, while delivering state-of-the-art image quality.



(a) (b)

Figure 3. (a) Power performance characteristics of the red-emitting MECSEL using SiC or diamond as intra-cavity heat spreaders. Due to the better thermal conductivity of diamond compared to SiC, higher output power could be reported, combined with a higher threshold. The highest output power achieved was 772 mW with diamond heat spreaders and 481 mW with SiC heat spreaders, respectively. (b) Various emission spectra plotted over the wavelength. 6 nm of tuning range from 676 nm to 683 nm could be achieved using SiC heat spreaders at room temperature operation.

Conference paper: Membrane external-cavity surface-emitting lasers (MECSELs): State of the art in broadband (> 25 THz) tuning and antiresonant gain structure design

Hermann Kahle, Philipp Tatar-Mathes, Patrik Rajala, **Mircea Guina**

[Proceedings Volume PC12141, Semiconductor Lasers and Laser Dynamics X;](#) PC1214109 (2022), https://doi.org/10.1117/12.2632734
Event: [SPIE Photonics Europe](#), 2022, Strasbourg, France

Abstract

Membrane external-cavity surface-emitting lasers (MECSELs) are a new kind of vertically emitting semiconductor laser with enormous potential and versatility for tailoring the laser parameters. Part of their benefits is related to the fact that they do not need to employ integrated distributed Bragg reflectors (DBRs), which are known to hamper the heat transfer and limit wavelength versatility via strain and band-gap engineering constrains. [Read More](#)

Slotted Y-branch laser for cw-THz thickness measurements at 1 THz

Nils Surkamp, Alexandra Gerling, James O'Gorman, Martin Honsberg, Sebastian Schmidtmann, Uttam Nandi, **Sascha Preu,** Joachim Sacher, Carsten Brenner, Martin R. Hofmann

Proceedings Volume 12021, Novel In-Plane Semiconductor Lasers XXI; 1202104 (2022)
https://doi.org/10.1117/12.2609787
Event: SPIE OPTO, 2022, San Francisco, California, United States

ABSTRACT

This work investigates a monolithic slotted Y-branch diode laser as a beating source to drive a continuous wave Terahertz spectrometer. Both arms of the Y-branch laser exhibit spectral selective feedback, which causes simultaneous emission at two frequencies. At first, a thorough optical characterisation with 5400 individual setpoints is performed to find the best point of operation. Two operational regimes with difference frequencies of 1 THz ± 10.5 GHz and 0.85 THz ± 6.5 GHz were identified. While validating the laser as a beating source to drive a cw-THz spectrometer, it was demonstrated that the device supports current-induced tuning of the emitted difference frequency. This technique allows frequency sweeps in the terahertz regime that can be used to measure the transmitted field without a mechanical delay stage. Finally, this technique is demonstrated to independently determine the thickness and refractive index of high resistive float zone silicon wafers of 2, 3.5, 4 and 8 mm thickness without a priori knowledge.

Photonic Spectrum Analyzer for Wireless Signals in the THz Range

BENEDIKT LEANDER KRAUSE , ANUAR DE JESUS FERNANDEZ OLVERA, AND **SASCHA PREU**

Published in: **IEEE Access** **(Volume: 10)**

DOI: **10.1109/ACCESS.2022.3168162**

ABSTRACT We present an ultra-broadband and inexpensive photonic spectrum analyzer (PSA) for wireless signals with a frequency coverage from the microwave range till deep into the terahertz range. The difference frequency of two continuous-wave laser diodes works as the local oscillator frequency and a photoconductive antenna downconverts a signal under test with the aid of the optical local oscillator. With this approach we achieve a frequency coverage from less than 25 GHz to more than 1.25 THz, mostly limited by the tuning range of the lasers. No component of our spectrum analyzer needs to be interchanged in order to achieve the full tuning range, which makes our spectrum analyzer a fraction of the cost of an electronic spectrum analyzer that requires several extension modules for covering a similar frequency range. The system offers a minimum resolution bandwidth of 1.2 MHz at a displayed average noise level (DANL) as low as −113.8 dBm/Hz at 100 GHz or as low as −88.2 dBm/Hz at 1050 GHz.

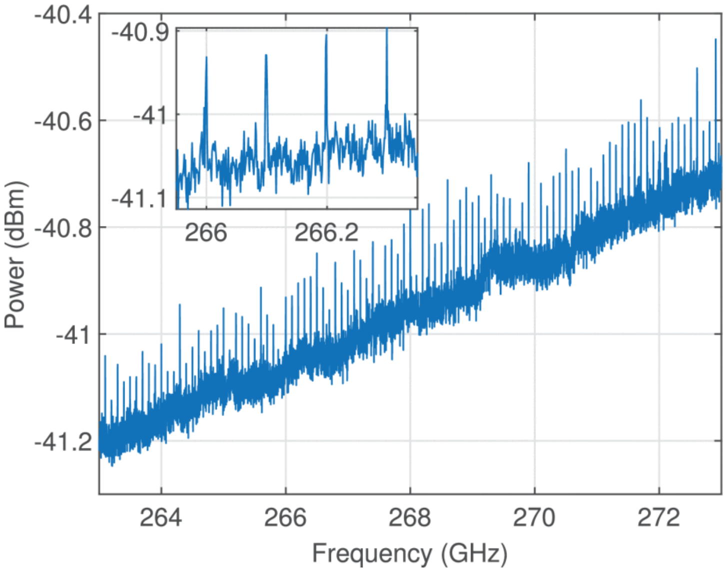


Fig. 11 Spectrum of the pulsed SUT from 263 GHz to 273 GHz with zoomed-in spectrum showing the individual modes.

Registration of histological brain images onto optical coherence tomography images based on shape information

Paul Strenge, Birgit Lange, Christin Grill, Wolfgang Draxinger, Veit Danicke, Dirk Theisen-Kunde, Christian Hagel, Sonja Spahr-Hess, Matteo M Bonsanto,

Robert Huber, Heinz Handels and Ralf Brinkmann

Abstract

Identifying tumour infiltration zones during tumour resection in order to excise as much tumour tissue as possible without damaging healthy brain tissue is still a major challenge in neurosurgery. The detection of tumour infiltrated regions so far requires histological analysis of biopsies taken from at expected tumour boundaries. The gold standard for histological analysis is the staining of thin cut specimen and the evaluation by a neuropathologist. This work presents a way to transfer the histological evaluation of a neuropathologist onto optical coherence tomography (OCT) images. OCT is a method suitable for real time in vivo imaging during neurosurgery however the images require processing for the tumour detection. The method demonstrated here enables the creation of a dataset which will be used for supervised learning in order to provide a better visualization of tumour infiltrated areas for the neurosurgeon. Read More

To cite this article before publication:

Paul Strenge et al 2022 Phys. Med. Biol. in press

https://doi.org/10.1088/1361-6560/ac6d9d

[Proposal of a new slit-lamp shield for ophthalmic examination and assessment of its effectiveness using computational simulations]

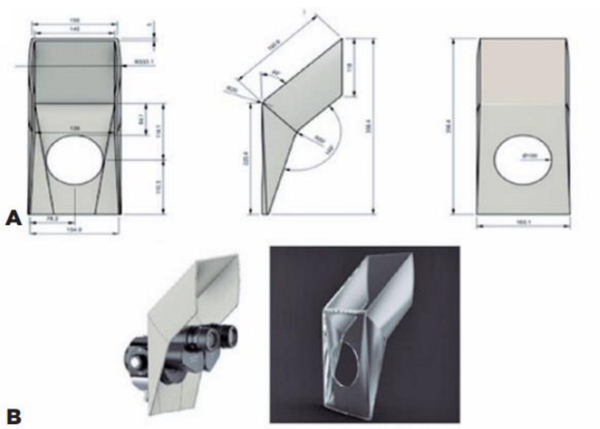
Daniel Araújo Ferraz; Zeyu Guan; Edinilson A. Costa; Eduardo Martins; **Pearse A. Keane;** Daniel Shu Wei Ting; Rubens Belfort Jr; Rafael Scherer; Victor Koh; Cristina Muccioli

May 2022, Arquivos Brasileiros de Oftalmologia 86(4)

DOI:10.5935/0004-2749.20230058

ABSTRACT

Purpose: This study aimed to use computational models for simulating the movement of respiratory droplets when assessing the efficacy of standard slit-lamp shield versus a new shield designed for increased clinician comfort as well as adequate protection. **Methods:** Simulations were performed using the commercial software Star-CCM+. Respiratory droplets were assumed to be 100% water in volume fraction with particle diameter distribution represented by a geometric mean of 74.4 (±1.5 standard deviation) μm over a 4-min duration. The total mass of respiratory droplets expelled from patients' mouths and droplet accumulation on the manikin were measured under the following three conditions: with no slit-lamp shield, using the standard slit-lamp shield, and using our new proposed shield. Read More

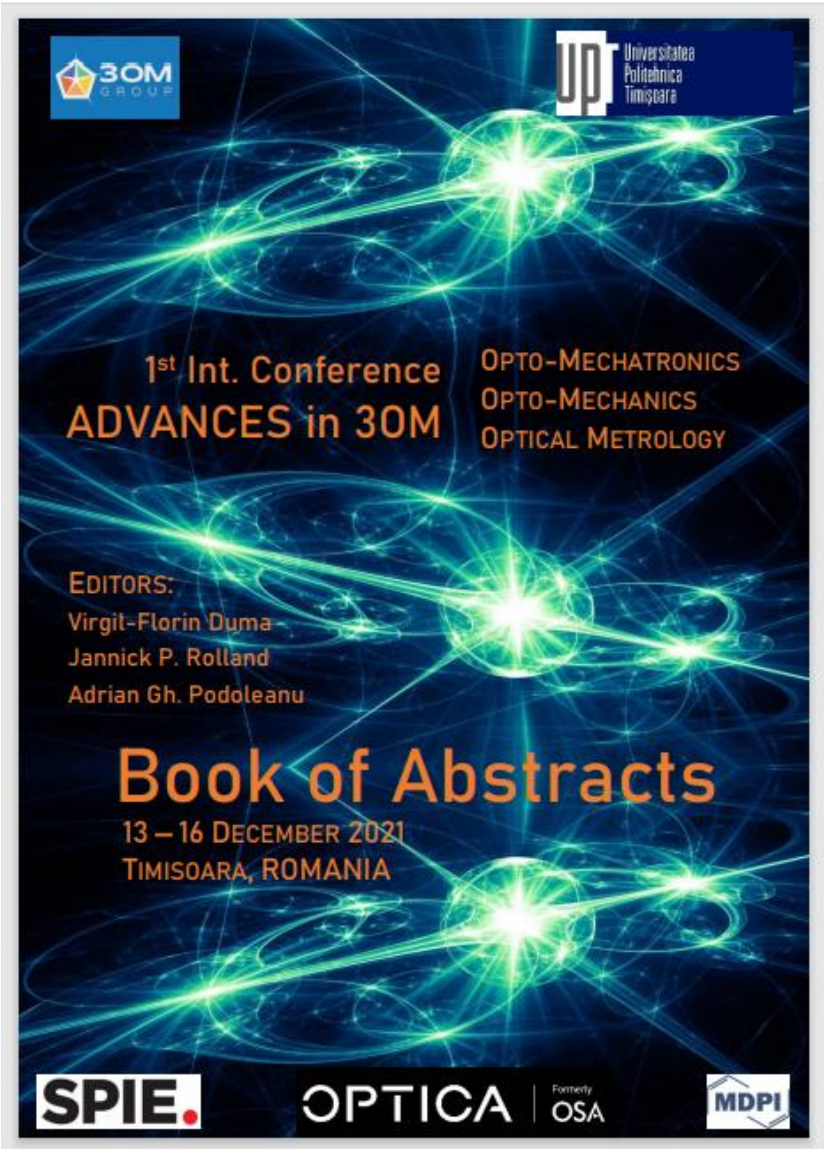


(A) Illustration of the measurements of the proposed shield. (B) Left image illustrates how the proposed shield will fit around the slit-lamp. The right image displays a 3D image of the proposed shield. These are the original figures drawn by the author; therefore, permission is granted for publishing and reproducing this figure.

Figure 1. Illustration of the measurements of the proposed shield.

Book of Abstracts:

1st Int. Conference ADVANCES in 3OM (OPTO-MECHATRONICS, OPTO-MECHANICS, and OPTICAL METROLOGY), 13–16 December 2021, Timisoara, ROMANIA



EDITORS:

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* **Jannick P. Rolland,** University of Rochester (USA)

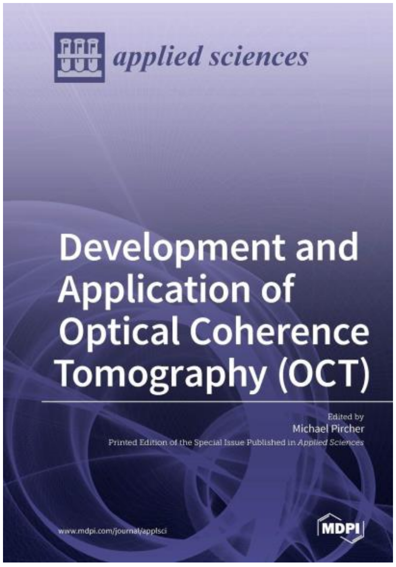
* **Adrian Gh. Podoleanu, University of Kent (UK)**

PDF available

NetLaS

BOOK of interest for NETLAS PhD Students

Development and Application of Optical Coherence Tomography (OCT) by Michael Pircher (Editor)



This special feature issue has been initiated to celebrate the 25th anniversary of Optical Coherence Tomography (OCT).

Publisher : MDPI AG;

Illustrated edition (7 Feb. 2018)

In OCT, broad bandwidth light is used in order to produce cross sectional images of turbid and translucent samples with high axial resolution (in the order of a few μm). The imaging speed of OCT can be as high as several millions of depth scans (A-scans) per second which allows for various applications in different fields. This special feature issue consists of three overview papers covering OCT angiography, polarization-sensitive OCT and dental applications of OCT. Additional applications and the latest developments in OCT are covered in nine research papers. The latest developments presented in this issue include magnetomotive OCT, resonant Doppler OCT, full field OCT, new segmentation algorithms and depth range extension. Applications of OCT are widely spread and range from quality control in tooth prostheses and coating thickness measurements in the automotive industry to the assessment of degradation of coatings and alveolar dynamics.

Order the book

Table of Contents

NetLaS

OPTICS & PHOTONICS NEWS

Optics & Photonics News Magazine May Issue

- Complex-Light Lasers
- New Optics for Cars
- Multiresonant Fiber Gratings

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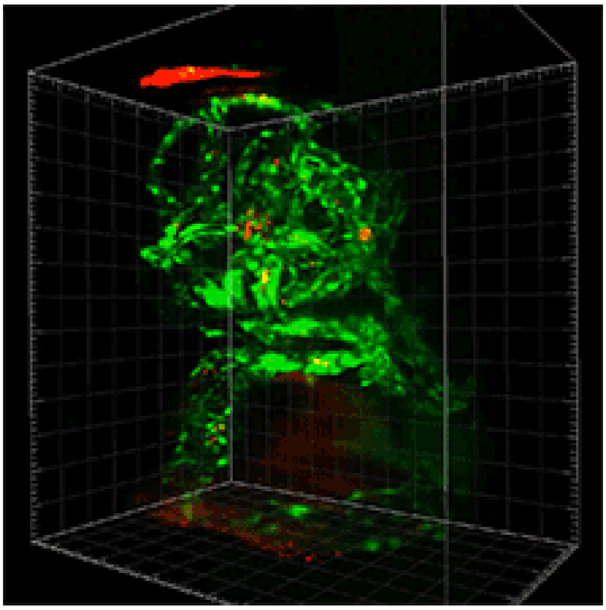
IMAGE OF THE WEEK



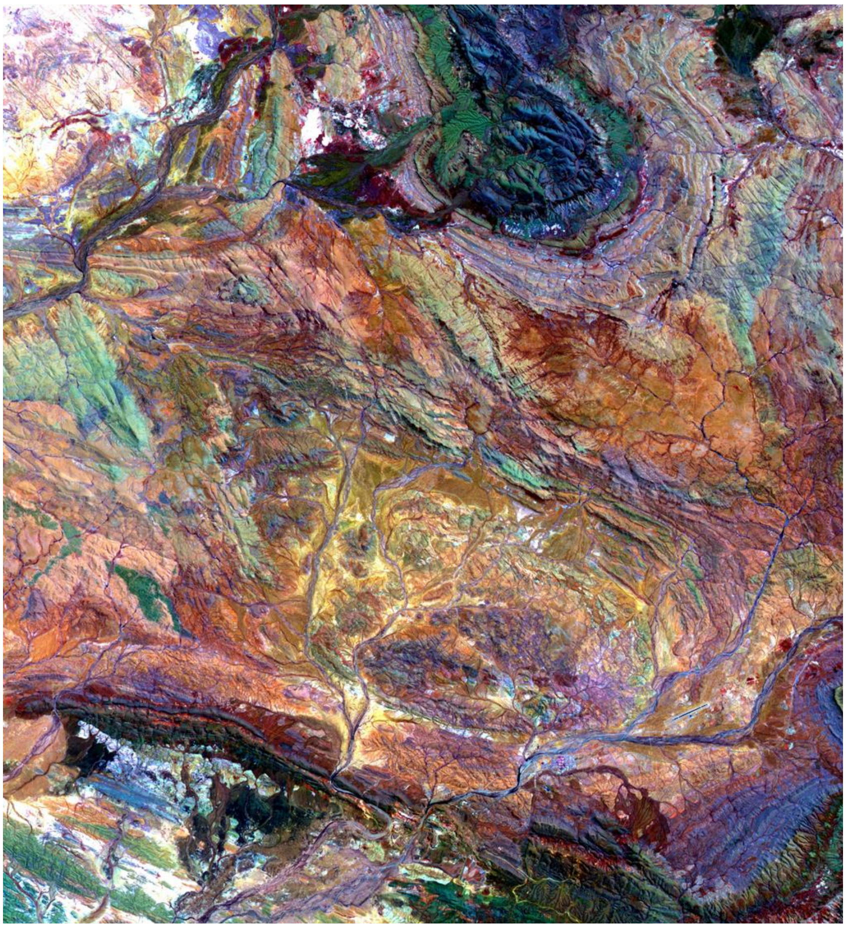
Airy-like beam-based light-sheet microscopy with improved FOV for zebrafish intracerebral hemorrhage

9 May 2022

See Visualization 3 in Opt. Express 30(9), 14709-14722 (2022).

3.6 Billion Years in Color

The Pilbara, north western Australia, which exposes some of the oldest rocks on Earth—over 3.6 billion years old—is captured in a composite image by the **Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER)** on the Terra satellite.



NASA/METI/AIST/Japan Space Systems, and U.S./Japan ASTER Science Team

The World's broadest tunable laser from NKT Photonics

SuperK CHROMATUNE

A new laser that gives you gap-free tuning from 400-1000 nm.

Industrial reliability

We know that uptime is important to you. CHROMATUNE is a fiber laser, which ensures excellent reliability and a lifetime of thousands of hours. It requires no maintenance or service, no alignment or adjustments. It is based on our reliable industrial laser platform, and you can trust it to run 24/7. You will always have the light you need.

Versatile & easy to use

We believe that you shouldn't have to be a laser expert to work with one. Pick your wavelength and press the button to get instant light. It is that easy.
We have designed it for applications such as:

- Microscopy
- Spectroscopy
- Fluorescence
- Lifetime imaging
- Optical characterization
- Plasmonics & metamaterials

Meet us at LASER World of PHOTONICS

Curious? Meet us at LASER World of PHOTONICS 2022 in Munich. Come by booth B5.328 to see the systems and have a chat.

GET THE DETAILS

NKT Photonics –
LASER World of PHOTONICS

26 -29 April 2022, Munich Summary

Couldn’t make it to LASER World of PHOTONICS? Or didn’t you make it to the NKT booth? Here are some videos that sum it up.

Our Laser Munich 2022 summary - NKT Photonics

The new products are:

The Koheras HARMONIK lasers for quantum applications give you performance like never before. New wavelengths. Higher power. Lower noise. Narrow linewidth. Industrial reliability.

The SuperK CHROMATUNE is the World’s broadest tunable laser. It gives you gap-free tuning from 400-1000 nm. Finally, a laser that is easy to use and lets you focus on your work.

The aeroPULSE FS10 is our brand-new, flexible femtosecond fiber laser that lets you tune the pulse from 350 fs to 5 ps.

Webinars

We recommend our NETLAS PhD students to attend these upcoming webinars (part of the free Thorlabs webinar series). Thorlabs' Digital Webinars are covering a variety of topics, each with a dedicated live Q&A session, and have a common goal of providing educational, engaging, and valuable content. Their live webinars have concluded for 2021. Check for this year's schedule and browse content from prior ones on the Recorded Webinars tab.

Thorlabs Previously Recorded Webinars

Thorlabs' Digital Webinar series began in mid-2020. Each webinar and Q&A session is recorded and added to the archive on Thorlab's web page.

NETWORK EVENTS

We invite all partners to communicate events and ideas to place in our newsletter

Please send any piece of news, on NETLAS activities or anything else happening that may be of interest to the NETLAS community, to Ramona Cernat: R.Cernat@kent.ac.uk and to Adrian Podoleanu: ap11@kent.ac.uk