



40th Newsletter of the ITN:

**“NEXt Generation
of Tuneable LASers for optical
coherence tomography”**

(NETLAS)

led by University of Kent



November 2023



CONGRATULATIONS to
ESR3 Philipp Tatar-Mathes
recruited by Tampere University

1st ESR to start his PhD within NETLAS-
1st ESR to finish his degree

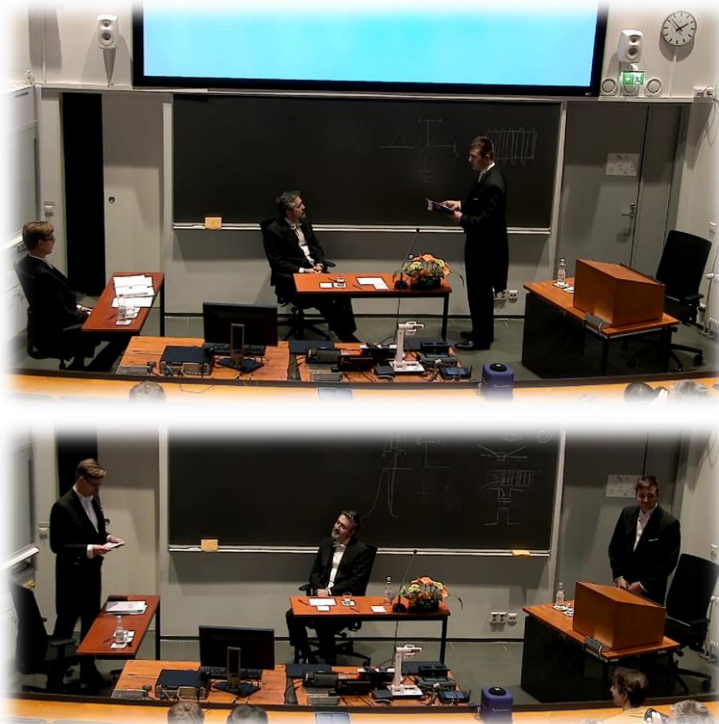
On 16th November 2023 **Philipp had his public PhD thesis defence** within the Optoelectronics Research Centre (ORC), a research team operating as part of Physics Unit in the Faculty of Engineering and Natural Sciences, Tampere University. **ORC is one of the largest academic research groups focused on optoelectronics technology and applications**, with core competence in molecular beam epitaxy (MBE) for the fabrication of GaAs-, InP-, and GaSb-based optoelectronics devices, semiconductor laser technology and applications, and photovoltaics.

Philipp's thesis was entitled "**Membrane-based Broadband Semiconductor Light Sources for Optical Coherence Tomography**" under the supervision of Prof. Mircea Guina. Philipp's presentation was also broadcasted via Teams, giving the chance to his NETLAS peers to attend online the special event. The thesis, as well as a press release are publicly available under this [link](#).

In his work, the ESR investigated membrane-based emitters and their potential implementation as a light source for OCT. Part of his work was also dedicated to the investigation of an all-fiber based PS-OCT setup and its variation with regards to temperature, aiming to improving the performance and versatility of similar future setups. The public examination will remain online for the next two weeks.



Philipp said: " First of all, I would like to thank my supervisor, [Professor Mircea Guina](#) for his trust to grant me such a position, as well as his support along the way. It was the professional environment that he created that made me want to move to Finland. Many thanks to [Dr. Hermann Kahle](#) for his supervision and including me into his team, providing countless hours of discussion and lessons not only about lasers, but also life in general. I am highly grateful to the entire [AOG group at Kent University](#) in the UK for providing a unique team atmosphere that I have not encountered anywhere else like that, as well as the professional guidance about OCT. I would like to especially name [Lecturer Dr Manuel Marques](#) and [Prof. Adrian Podoleanu](#) at this point. It was also thanks to [Dr Ramona Cernat's](#) constant efforts that I have gotten the opportunity within NETLAS to connect and interact with the other peers of the project. I would also like to thank the [NETLAS](#) funding for the generous financial support that not only provided me with all the necessary equipment but also enabled me to visit international conferences that I would otherwise not have been able to participate in, as well as finance a four month stay in the UK. There are these moments in which I have learned a lot in my professional life. It was also thanks to this project that I could network with a lot of like-minded people within all over Europe. In particular, I would like to thank [Alejandro](#), [Marie](#), [Sacha](#) and [Irene](#) for a great time and look forward to meeting anyone within the project also after it has come to an end. All of these experiences contributed to shaping me become the person I am today. **Thank you All.**"



@ photos by [NETLAS ESR Alejandro Martinez](#) taken from the online viewing



@ photos by [NETLAS ESR Ifte Khairul Alam Bhuiyan.](#)
Philipp with Prof. Guina (left) and his colleague Ifte (right)

Congratulations
Dr. Tatar-Mathes !





SECONDMENT

PhD12 Sacha Grelet recruited by NKT Photonics

Secondment: **University of Kent**, Applied Optics Group (AOG)

06/11/2023 – 22/12/2023



@Sacha - the sun was present for my last day working in Denmark! 😊DK

I would like to thank my colleagues and mentors who have supported and guided me through my journey at NKT Photonics. The kindness, expertise and camaraderie I have experienced have been truly invaluable.



@photo by Sacha – at
AOG, Kent University- with
Alejandro, very excited to
open the box with the new
laser source



The past 4 years have been extremely rich in learnings and discoveries. From the very beginning, I was engaged on interesting projects. **My team gave me opportunities to bring my ideas, the means to materialize them, and I have been trusted to present our results in multiple schools and conferences worldwide.** This exposure has significantly contributed to **my growth and development, both as a scientist and as an individual.**

Although I bid farewell to my colleagues today, **the bonds we have built will remain strong. I am immensely grateful for the friendships I have formed** and I am looking forward to meeting you again.

The next step in my journey brings me to the United Kingdom, to the [Applied Optics Group's labs](#) of the [University of Kent](#) GB. There, we will demonstrate the potential of our new laser source for ultrafast OCT imaging.

An exciting experiment, that will be the grand final of my PhD.

Good luck Sacha!!



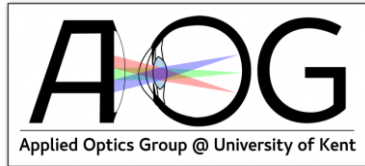
RECENDT have some news:

- An Optics Area Manager position is vacant currently,

RECENDT is looking for replacements:

<https://www.recendt.at/en/vacant-positions.html>

- Currently [Dr Bettina Heise](#) has taken over the **THz field** additionally as Parental leave replacement, at least till summer 2024 **RECENDT** have merged both groups (OCT and THz) meanwhile.
- At beginning of December 2023, Dr Bettina Heise is expecting a visit of [Prof. Sascha Preu](#), our [NETLAS Beneficiary from Technical University of Darmstadt](#), Germany, integrated in the NETLAS frame planned to visit, discuss cooperation and to deliver a talk to everyone in **RECENDT**.



AOG Visits

Dr Sophie Caujolle's visit the AOG

1st November 2023 at 12 pm

SLT1 Stacy Building, Kent University



Dr Sophie Caujolle - *former PhD student under Prof. Podoleanu's supervision* - completed postgraduate study in Applied Optics at Kent University and now works as Project manager at [Heidelberg Engineering](#), Germany.

Sophie was giving a talk titled "**From Academia to Industry, an Insight**" to Kent undergraduate students and to NETLAS and AOG members.

"We thank Sophie for her continuous contribution to the training of our AOG members and SPS students, and for keeping in touch. Looking forward for your next visit". – Prof. Podoleanu



“One week ago, I went back to the University of Kent where I did my PhD in the AOG group to give a presentation to undergraduate students about going from academia to industry.

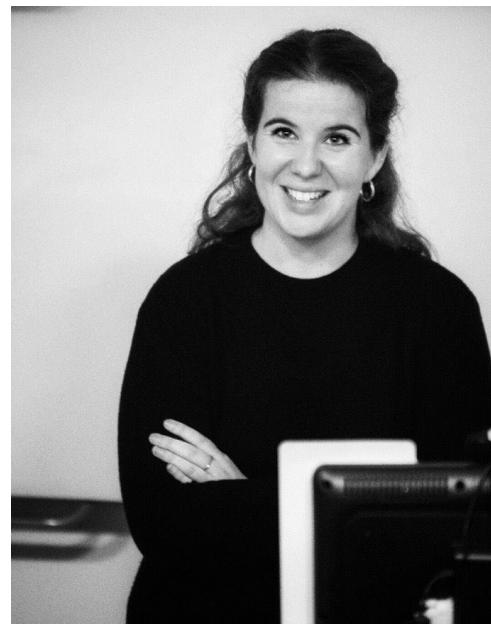
Aside from having the chance to see my old colleagues from the AOG (now my friends), it was really **an honour to be able to exchange with the young generation about my path, my success but also my setbacks**. In an hour, we went from subjects such as my current job and how my applied optics PhD is useful in my day-to-day job as a product manager to the place of women in the science field.

I always felt lucky to have met inspiring and uplifting people along the path and if I can even give back one drop of it, then this will be part of my main success in my career.

Thank you [Adrian Bradu](#) to have given me this chance”.

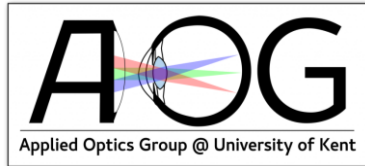
@ Dr. Sophie Caujolle

PS: thanks [Alejandro Martínez Jiménez](#) for the nice picture. When I see the smile on my face, it gives me the confirmation of being happy while exchanging ideas and views with other people.





A few photos from Dr. Sophie Caujolle's visit
@photos by Dr Ramona Cernat and [NETLAS ESR Alejandro Martinez Jimenez](#)

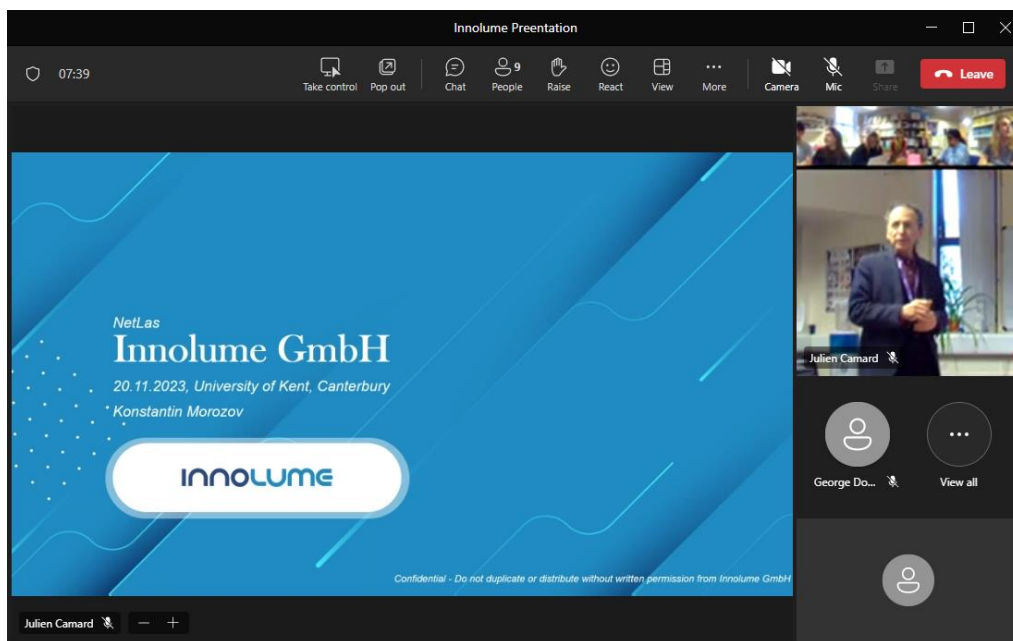


AOG Visits

Dr Konstantin Morozov's visit the AOG

20th November 2023 at 2.30 pm

On Monday, 20th of November 2023, AOG lab members welcome Dr Konstantin Morozov from [Innolume](#) based in Dortmund, Germany - [NETLAS beneficiary](#). Konstantin delivered a general presentation of the company, which included an overview on history, facilities and technology, followed by products, R&D directions and other projects and activities apart from NETLAS. The presentation took place in Photonics building, University of Kent at 2.30 pm and was available online on Teams. After the presentation, Konstantin visited the labs of the AOG researchers, with the group's PhD students and post-docs being able to informally explain their area of research and potential applications. Screen prints from the presentation will follow.





Innolume Presentation

10:51

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General view

Innolume's core competency is design, development and manufacturing of sophisticated photonic chips based on novel laser diode technologies in GaAs & InP material systems targeting medical, industry, scientific and optical communication markets.

innolume

- III-V semiconductor fab
- GaAs, InP Laser Diodes
- ISO 9001:2015
- profitable since 2015, 40% CAGR last 4 years
- 120 active customers
- Founded in 2003
- 52 employees, 43 FTEs

Discontinued - Do not duplicate or distribute without written permission from Innolume GmbH

Julien Camard

Innolume Presentation

12:09

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General view

innolume

Discontinued - Do not duplicate or distribute without written permission from Innolume GmbH

Julien Camard

Innolume Presentation

38:38

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INNO EU Projects

innolume

VTL Swept source development projects

NetLaS

CONNECTS

gladan

PUNCH
packaging of ultra-dynamic photonic switches and transceivers

Universal Frequency Comb

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Julien Camard

@princreens taken by Dr Ramona Cernat





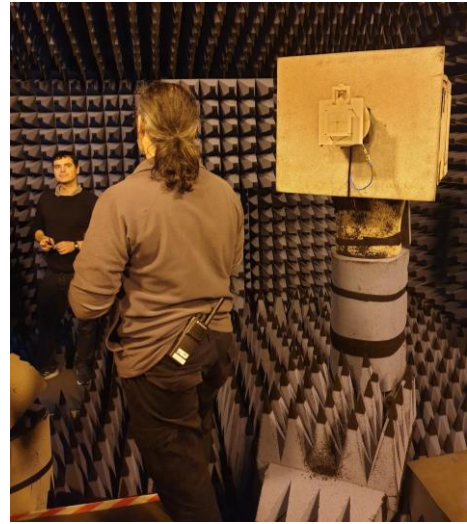
OPTICA Chapter event - visit engineering labs at the University of Kent

On 25th October 2023, students from the Optica Chapter attended the **opening event of Kent's Engineering society**. Their president Giuseppe Joulianou presented the society's mission and aspirations, highlighting their keen interest in forging partnerships with established networks and charities to collaborate on various projects. Among these potential collaborators was **REMAP** (www.remap.org.uk), a UK charity which custom-makes equipment to help disabled people live more independent lives.

Lucy Abbott, president of the Optica Chapter, communicated interest on creating a joint Optics/Engineering project, which should foster growth and mutual learning for both groups!

The Chapter's members then had the **opportunity of visiting Kent's Antennas lab**, a state-of-the-art facility dedicated to **testing antennas of varying sizes and shapes**, with applications spanning from space technology to wearable devices. They also had the chance of visiting the **lab's impressive anechoic chamber**, where large antennas are tested over a wide range of radio-frequencies. The conical foam blocks visible on the walls absorb radiation over the studied frequency range, ensuring that only direct incident waves are detected!

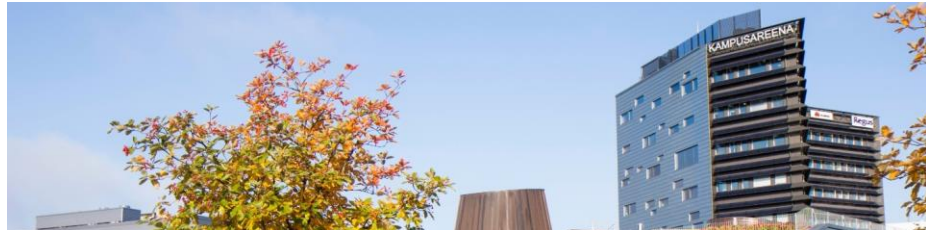
The Optica Student Chapter is looking forward to soon collaborating with the Engineering society on common goals!



@Article and photos by AOG PhD Student Julien Camard



SPIE Tampere University Student Chapter Visit



On 8th November 2023, the [SPIE Tampere University student chapter](#) has recently **visited Microsoft** located at Tampere in Finland. Among different things, in Tampere they **focus on mainly R&D of cameras** for Microsoft surfaces, and laptops.

Specialists on different technical areas gave their presentations, following Q&A sessions after each. The students were guided to different lab inside Microsoft and they had chances to talk the correspondence directly. Most of the students joined the occasion are doing PhD in the area of Photonics, and Optoelectronics at Tampere University.

Source: <https://www.linkedin.com/feed/update/urn:li:activity:7128310310054047744/>



@ Article by [NETLAS ESR Ifte Khairul Alam Bhuiyan](#)



Meeting

Between 16-17th of Nov 2023 [NETLAS PhD Student Sacha Grelet](#) took part in a project meeting organized by [SEQUOIA](#) at [TU Delft](#), Netherlands. Sacha had the chance to attend the meeting which was a combination of an online meeting with the SEQUOIA Advisory Board and a presentation from Horizon Europe quantum project [MUQUABIS](#). It was a great opportunity for Sacha to take part in the face-to-face discussions about the conceptually difficult technical details of the project.



@ photo by [SEQUOIA Horizon Europe project](#)



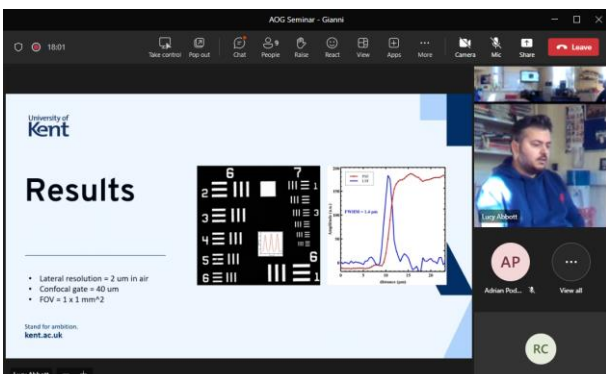
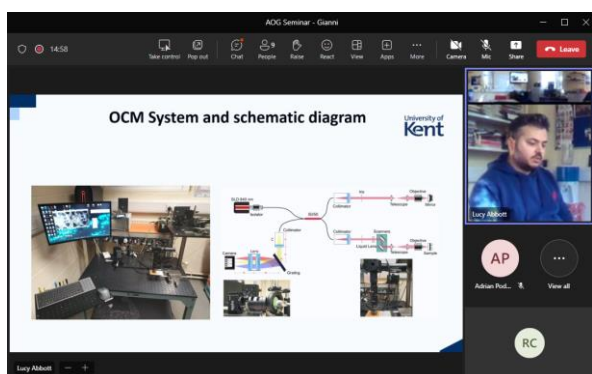
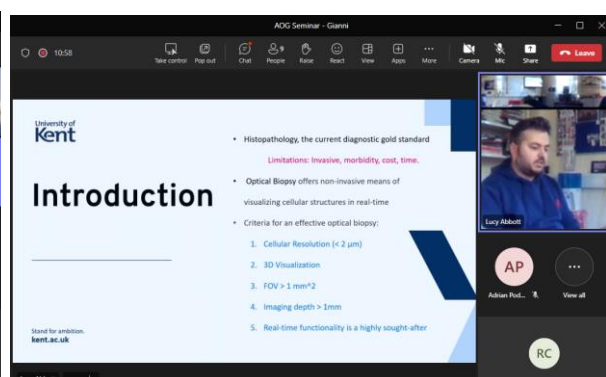
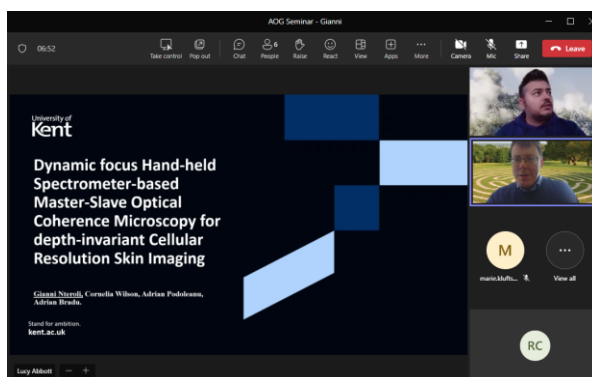
AOG Seminar

17/11/2023 at 12 pm

AOG Research Associate Gianni Nteroli

presented results of his research with the title “*Dynamic focus optical coherence microscopy*”. Gianni’s project under [Dr. Adrian Bradu’s](#) supervision is funded by the Medical Sciences Awards.

Print screens from his presentation will follow.



@princreens taken by Dr Ramona Cernat



AOG Seminar - Gianni

19:11

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University of Kent

Images

Stand for ambition.
kent.ac.uk

- Criteria for an effective optical biopsy:
 1. Cellular Resolution ($< 2 \mu\text{m}$)
 2. 3D Visualization
 3. FOV $> 1 \text{ mm}^2$
 4. Imaging depth $> 1 \text{ mm}$
 5. Real-time functionality is a highly sought-after

Lucy Abbott

AP Adrian Pod... View all

RC

AOG Seminar - Gianni

21:14

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University of Kent

Lung Cancer

Stand for ambition.
kent.ac.uk

Lucy Abbott

AP Adrian Pod... View all

RC

AOG Seminar - Gianni

24:00

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University of Kent

Conclusions

- Challenges and limitations:
 1. Improve axial resolution ($< 2 \mu\text{m}$)
 2. Speed up the imaging
 3. Improve FOV
 4. Improve lateral resolution

Stand for ambition.
kent.ac.uk

Lucy Abbott

AP Adrian Pod... View all

RC

University of Kent

AOG

paper orange

chicken tissue chicken skin

@princeens taken by Dr Ramona Cernat



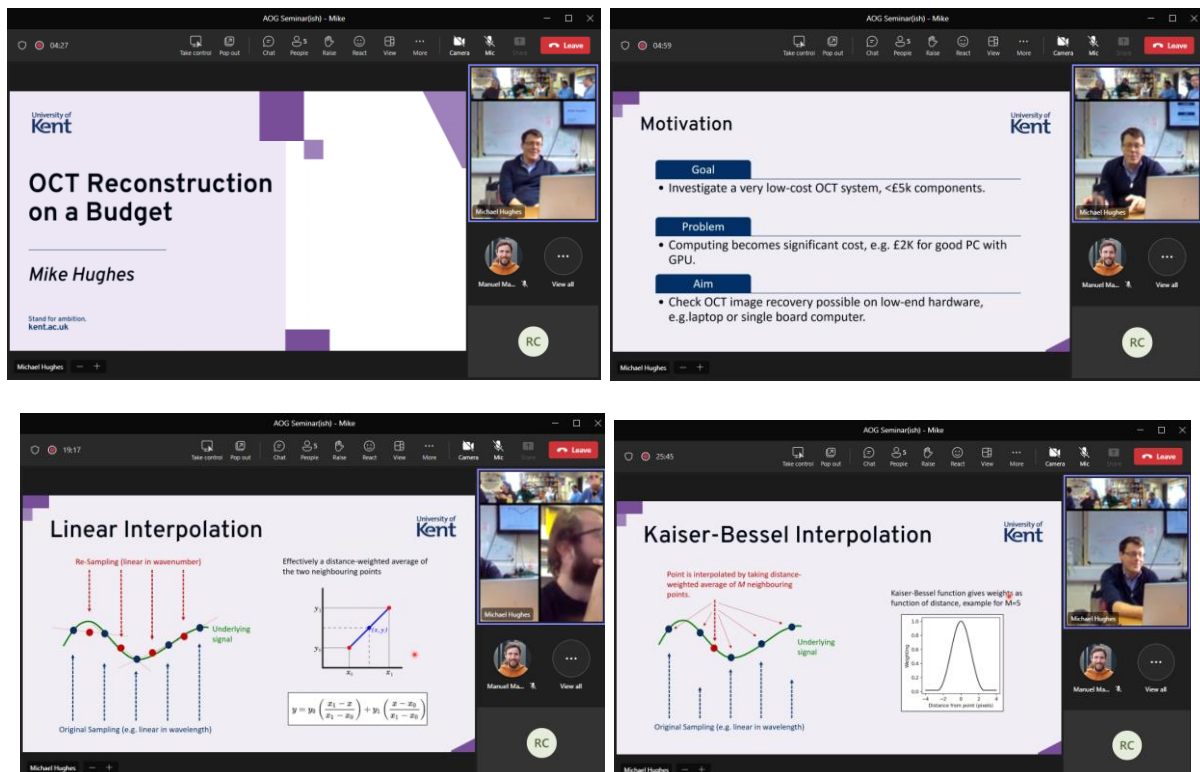
AOG Seminar

[Dr. Michael Hughes](#)

24/11/2023 at 1 pm

OCT image recovery in Python

Mike discussed some lightweight python code for doing OCT image recovery (i.e. going from spectra to images), aimed at low-cost OCT systems using low-end computers or even a Raspberry Pi. Presentation was technical, being presented details of OCT image recovery, things like non-uniform Fourier transforms, Kaiser-Bessel interpolation and Hilbert transforms. No new science, just implementation details. Print screens taken from the presentation will follow.



@ Print screens by Dr. Ramona Cernat



AOG Seminar(ish) - Mike

27:01

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Interpolation in Python

University of Kent

1024 point spectra. Processed in batches of 1000.

Method	Time per A-scan (us)	Equivalent A-scan Rate
Spline Interpolation (Numpy)	175	6000
Linear Interpolation (Numpy)	20	50,000
Linear Interpolation Using Pre-Calculation (Python)	8.9	110,000
Linear Interpolation Using Pre-Calculation (Python and Numba JIT Compiler)	3.1	320,000
Kaiser Bessel Interpolation (Python and Numba JIT Compiler)	3.4	300,000

Michael Hughes

Manuel Ma... View all

RC

AOG Seminar(ish) - Mike

30:48

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Comparison with CMS-OCT

University of Kent

FFT CMS Spline + Dispersion KB + Dispersion

Michael Hughes

Manuel Ma... Rene Riba

RC

AOG Seminar(ish) - Mike

31:48

Take control Pop out Chat People Raise React View More Camera Mic Share Leave

Comparison with CMS-OCT

University of Kent

FFT CMS Spline + Dispersion KB + Dispersion

Michael Hughes

Manuel Ma... Rene Riba

RC

AOG Seminar(ish) - Mike

39:48

Take control Pop out Chat People Raise React View More Camera Mic Share Leave

Conclusions on Python OCT

University of Kent

On a mid-range laptop/desktop, can run up to 100 kHz line rates for 1024 spectral points with no dispersion compensation.

If needed, dispersion compensation is currently slow, not much faster than CMS-OCT, especially if not all depth range is needed.

Michael Hughes

Manuel Ma... Rene Riba

RC

@ Print screens by Dr. Ramona Cernat



CONGRATULATIONS Prof. Guina

We are very happy to spread the news about [Prof. Mircea Guina](#) from [Tampere University - NETLAS Beneficiary](#) - being elected as a Board of Stakeholders member of [Photonics21!](#)



As of the closing date on 7 November 2023, a total of 125 Photonics21 voters participated in the two-week online election for the Photonics21 Board of Stakeholders. This corresponds to an impressive voting rate of 83.89%.

[The following 14 organisations and member representatives](#) have been successfully elected to the Board of Stakeholders, listed alphabetically by affiliation: [PHOTONICS21 WELCOMES 14 NEWLY ELECTED MEMBERS OF PHOTONICS21 BOARD OF STAKEHOLDERS](#)

[NETLAS](#) is very proud that **Prof. Guina joined the list of distinguished specialists** contributing to shaping the European research agenda in photonics.

Congratulations Prof. Guina!



NETLAS Beneficiary DTU was named BEST TECHNICAL UNIVERSITY IN EUROPE

DTU's research and study programmes top the new EngiRank list, which ranks 225 technical universities in 27 EU countries.

DTU's research and study programmes tops the new EngiRank list which ranks 225 technical universities in 27 EU countries. The ranking is based on recognized EU data sources such as CORDIS and Erasmus+ as well as publication and citation statistics based on the Scopus database, and patent statistics from the European Patent Office. With special focus on the EU, EngiRank includes—among other indicators—the universities' success in raising research funds, and examines how students apply for admission to engineering programmes at technical universities in the EU.

Quality in research and education

DTU is ranked as number one in EngiRank's overall ranking, which is based on 15 indicators, broken down by five criteria: **Research, Innovation, SDG 9, Internationalization and Interdisciplinarity.**

The underlying rankings by subject have been calculated according to a different method, which varies from subject ranking to subject ranking. The primary criteria are: Research, Innovation, Teaching Quality, and SDGs.

Read more about the ranking [here](#).

PUBLICATIONS

Low-loss operation of silicon-on-insulator integrated components at 2.6–2.7 μm

Heidi Tuorila, **Jukka Viheriälä**, Matteo Cherci, Mikko Harjanne, Yisbel Marin, Samu-Pekka Ojanen, Pentti Karioja, and **Mircea Guina**

Opt. Express 31, 39039-39048 (2023)

<https://doi.org/10.1364/OE.497645>

Development of mid-infrared photonics is gaining attention, driven by a multitude of sensing applications requiring increasingly compact and cost-effective photonics systems. To this end, **low-loss operation of μm -scale silicon-on-insulator photonic integration elements is demonstrated for the 2.6–2.7 μm wavelength region. The platform utilizes the 3 μm thick silicon core layer technology enabling demonstration of low-loss and low birefringence waveguides.** Measurements of record low single mode waveguide propagation losses of 0.56 ± 0.09 dB/cm and bend losses <0.08 dB for various miniaturized bend geometries are presented and validated by simulation. Furthermore, a wavelength filter based on echelle grating that allows to select several operating channels within the 2.64–2.7 μm band, with a linewidth of ~ 1.56 nm for each channel is presented.

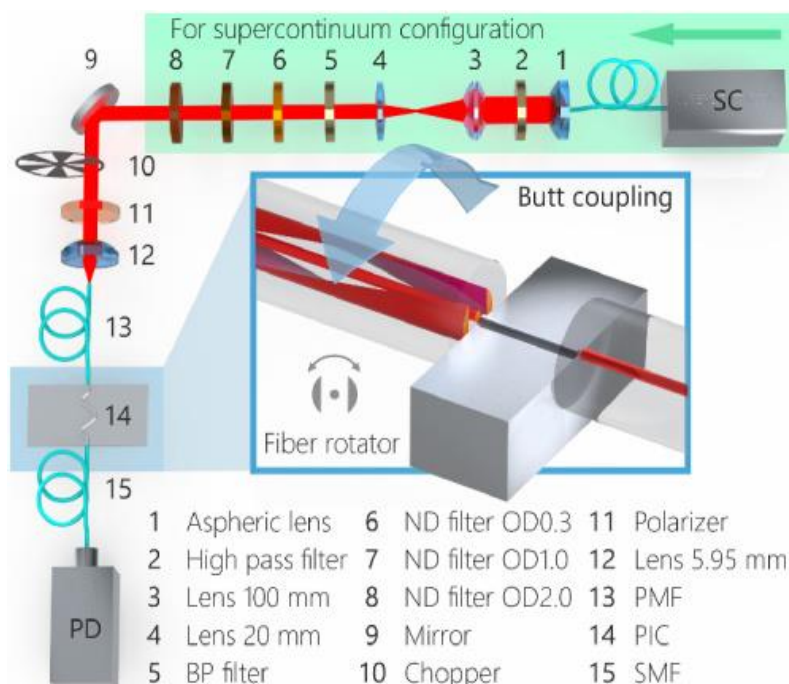


Fig. 1. Measurement setup configuration with the supercontinuum light source.

Real-time processing of fiber bundle endomicroscopy images in Python using PyFibreBundle

Michael R. Hughes

Appl. Opt. 62, 9041-9050 (2023)

<https://doi.org/10.1364/AO.503700>

Fiber imaging bundles allow the transfer of optical images from place-to-place along narrow and flexible conduits. Traditionally used extensively in medical endoscopy, bundles are now finding new applications in endoscopic microscopy and other emerging techniques. PyFibreBundle is an open-source Python package for fast processing of images acquired through imaging bundles. This includes detection and removal of the fiber core pattern by filtering or interpolation, and application of background and flat-field corrections. It also allows images to be stitched together to create mosaics and resolution to be improved by combining multiple shifted images. **This paper describes the technical implementation of PyFibreBundle and provides example results from three endomicroscopy imaging systems: color transmission, monochrome transmission, and confocal fluorescence.** This allows various processing options to be compared quantitatively and qualitatively, and benchmarking demonstrates that PyFibreBundle can achieve state-of-the-art performance in an open-source package. **The paper demonstrates core removal by interpolation and mosaicing at over 100 fps, real-time multi-frame resolution enhancement and the first demonstration of real-time endomicroscopy image processing, including core removal, on a Raspberry Pi single board computer.** This demonstrates that PyFibreBundle is potentially a valuable tool for the development of low-cost, high-performance fiber bundle imaging systems. [Read More](#)

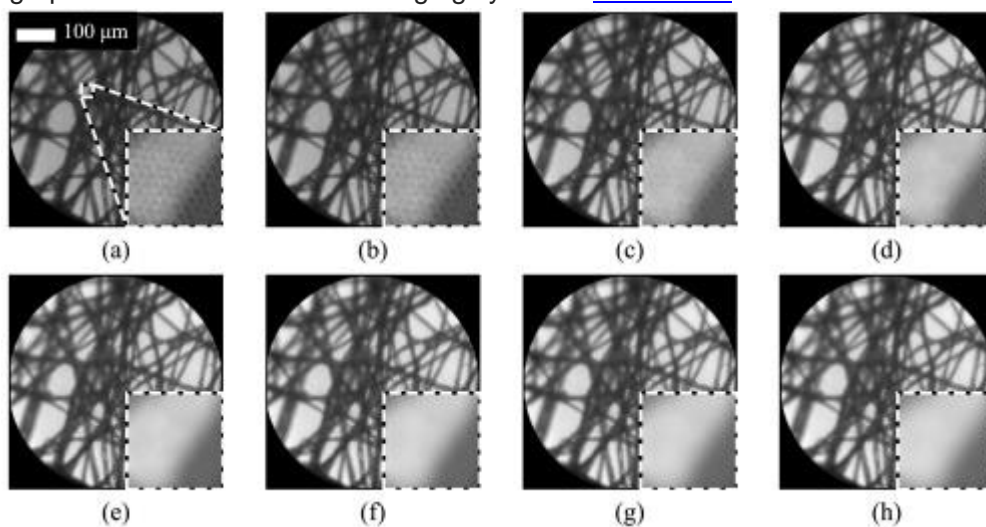


Fig. 2. Core removal using Gaussian filters of different sizes for transmission image of lens tissue paper. Raw images were first cropped, masked and normalized. [Read More](#)

***In vivo* volumetric depth-resolved imaging of cilia metachronal waves using dynamic optical coherence tomography**

Tian Xia, Kohei Umezu, Deirdre M. Scully, Shang Wang, and Irina V. Larina

Optica 10, 1439-1451 (2023)

<https://doi.org/10.1364/OPTICA.499927>

Motile cilia are dynamic hair-like structures covering epithelial surfaces in multiple organs. The periodic coordinated beating of cilia creates waves propagating along the surface, known as the metachronal waves, which transport fluids and mucus along the epithelium. Motile ciliopathies result from disrupted coordinated cilia beating and are associated with serious clinical complications, including reproductive disorders. Despite the recognized clinical significance, research of cilia dynamics is extremely limited. Here, **we present quantitative imaging of cilia metachronal waves volumetrically through tissue layers using dynamic optical coherence tomography (OCT)**. Our method relies on spatiotemporal mapping of the phase of intensity fluctuations in OCT images caused by the ciliary beating. We validated our new method *ex vivo* and implemented it *in vivo* to visualize cilia metachronal wave propagation within the mouse fallopian tube. **This method can be extended to the assessment of physiological cilia function and ciliary dyskinesias in various organ systems**, contributing to better management of pathologies associated with motile ciliopathies. [Read More](#)

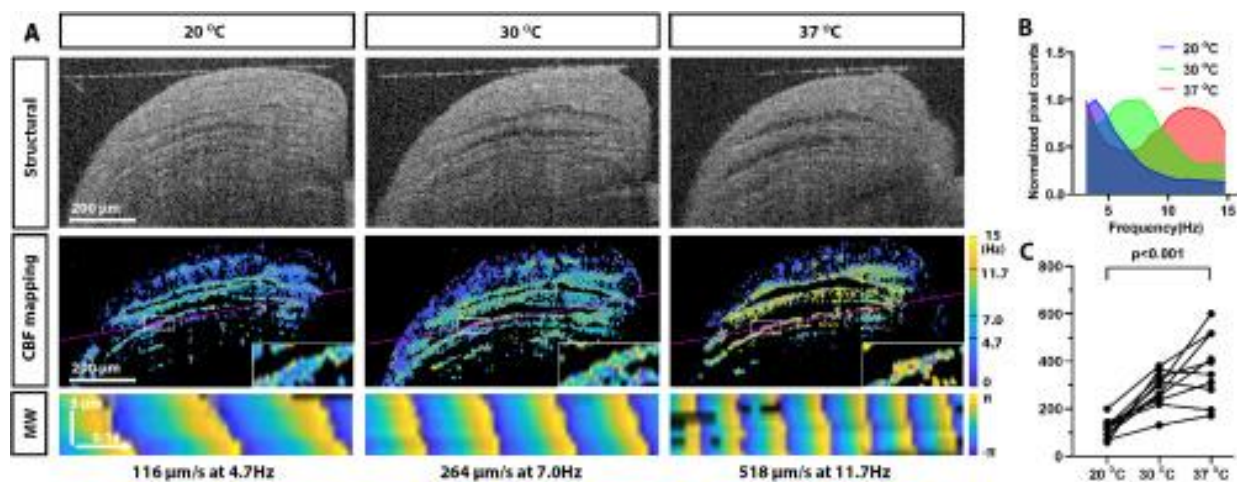


Fig. 4. Cilia metachronal wave velocity increases with temperature. A: Structural OCT images of the same location of a mouse fallopian tube imaged *ex vivo* at different temperatures are shown in the top row. [Read More](#)

Visible light photoacoustic ophthalmoscopy and near-infrared-II optical coherence tomography in the mouse eye

R. Haindl, V. Bellemo, P. Rajendran , B. Tan , M. Liu, B. S. Lee , Q. Zhou, R. A. Leitgeb, W. Drexler, L. Schmetterer, M. Pramanik

APL Photonics 8, 106108 (2023)

<https://doi.org/10.1063/5.0168091>

Non-invasive imaging plays a crucial role in diagnosing and studying eye diseases. However, existing photoacoustic ophthalmoscopy (PAOM) techniques in mice have limitations due to handling restrictions, suboptimal optical properties, limited availability of light sources, and permissible light fluence at the retina. **This study introduces an innovative approach that utilizes Rose Bengal, a contrast agent, to enhance PAOM contrast.** This **enables visualization of deeper structures**, such as the choroidal vasculature and sclera in the mouse eye, **using visible light**. The integration of near-infrared-II (NIR-II) optical coherence tomography provides additional tissue contrast and insights into potential NIR-II PAOM capabilities. To optimize imaging, we developed a cost-effective 3D printable mouse eye phantom and a fully 3D printable tip/tilt mouse platform. This solution elevates PAOM to a user-friendly technology, which can be used to address pressing research questions concerning several ocular diseases, such as myopia, glaucoma, and/or age-related macular degeneration in the future. [Read More](#)

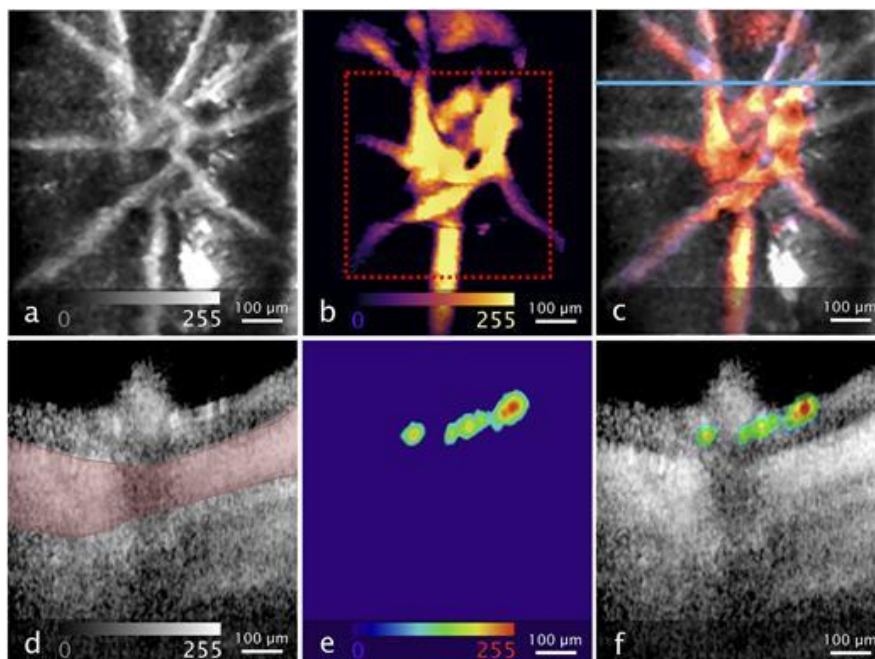


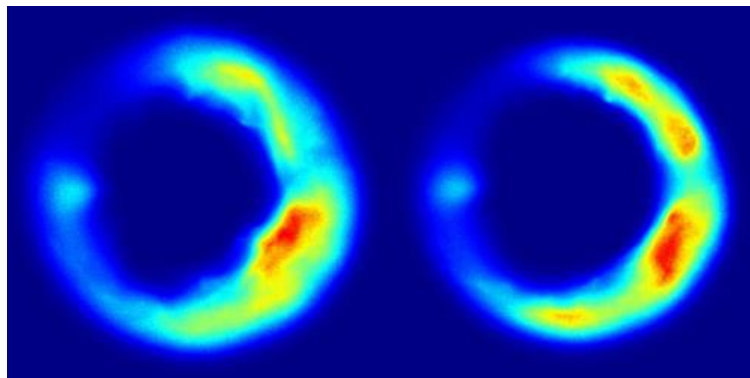
Fig. 3 Multimodal OC-PAOM imaging results.



Measuring the Intensity of the World's Most Powerful Lasers

Electrons can help infer laser intensities that are too high to measure using conventional methods.

Scientists are building extremely powerful lasers. For around a trillionth of a second, one of these machines will emit thousands of times the power of the US electric grid. **Such devices could allow researchers to explore unsolved problems related to fundamental physics principles and to develop innovative laser-based technologies.** But **these applications require precise knowledge of the intensity of any such laser, a parameter that is difficult to measure, as no known material can withstand the anticipated extreme conditions of the laser beams.** Now Wendell Hill at the University of Maryland, College Park, and his colleagues **demonstrate a technique that uses electrons to determine this intensity.**



S. Ravichandran *et al.*

For their demonstration, **the researchers fired a high-power laser pulse at a low-density gas, causing the gas to release electrons.** The laser's electromagnetic field then propelled these electrons forward and out of the laser beam. The team observed **the angular distribution of the ejected electrons in real time using surfaces called image plates that act like photographic film.** Read More from [Physics - Measuring the Intensity of the World's Most Powerful Lasers \(aps.org\)](https://www.aps.org/publications/physicstoday/2017/04/physicstoday)

Compressed sensing of human breast optical coherence 3-D image volume data using predictive coding

Diego M. Song Cho, Manuel J. Jerome, and Christine P. Hendon

Biomed. Opt. Express 14, 5720-5734 (2023)

<https://doi.org/10.1364/BOE.502851>

There are clinical needs for optical coherence tomography (OCT) of large areas within a short period of time, such as imaging resected breast tissue for the evaluation of cancer. We report on the use of denoising predictive coding (DN-PC), a novel compressed sensing (CS) algorithm for **reconstruction of OCT volumes of human normal breast and breast cancer tissue**. The DN-PC algorithm has been rewritten to allow for computational parallelization and efficient memory transfer, resulting in a net reduction of computation time by a factor of 20. We compress image volumes at decreasing A-line sampling rates to evaluate a relation between reconstruction behavior and image features of breast tissue. [Read More](#)

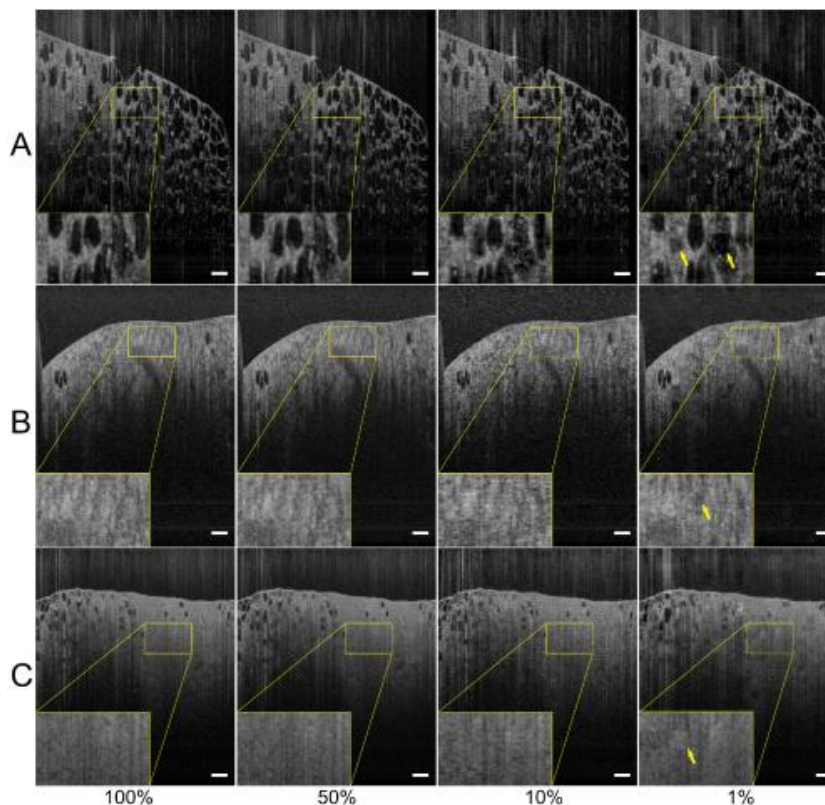


Fig. 2. Breast tissue DN-PC based image reconstructions by tissue subtype (A = normal adipose, B = normal stroma, C = cancer) at four A-line sampling rates (scale bar = 250 μ m).

Zoomed-in subregions are depicted (bottom left) for each frame; arrows indicate morphological changes and patch-shaped artifacts that appear as compression is higher.

Retinal Optical Coherence Tomography Features Associated With Incident and Prevalent Parkinson Disease

Siegfried Karl Wagner et al. **Pearse Andrew Keane**

Neurology Oct 2023, 101 (16) e1581-e1593

<https://doi.org/10.1212/WNL.0000000000207727>

Background and Objectives Cadaveric studies have shown disease-related neurodegeneration and other morphological abnormalities in the retina of individuals with Parkinson disease (PD); however, it remains unclear whether this can be reliably detected with in vivo imaging. **We investigated inner retinal anatomy, measured using optical coherence tomography (OCT), in prevalent PD and subsequently assessed the association of these markers with the development of PD using a prospective research cohort.**

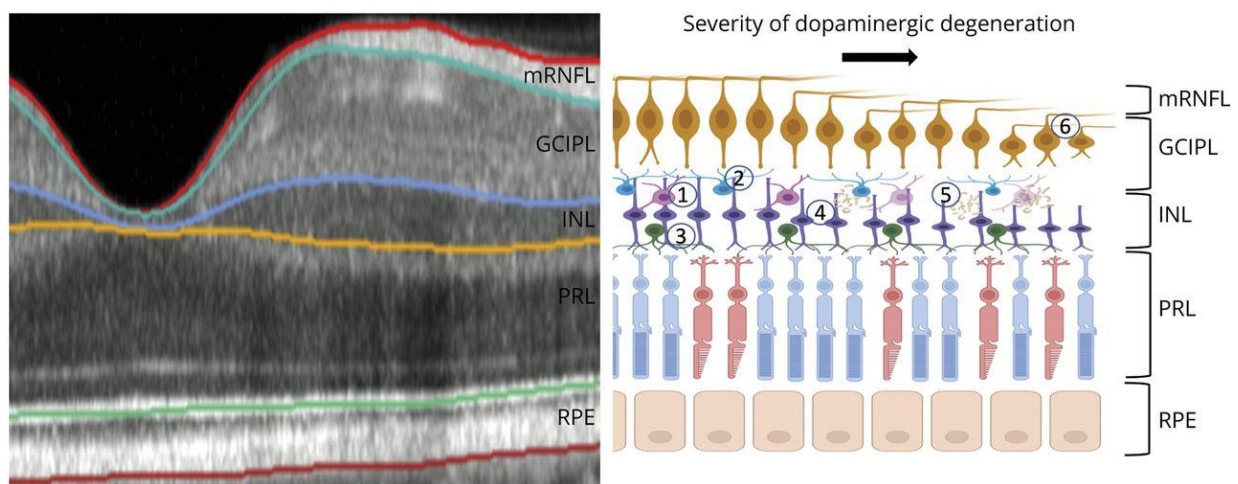


Figure 4 Illustration of Cell Type Distribution in the Retina. An example optical coherence tomography scan of the nasal macula adjacent to schematic detailing interactions with dopaminergic amacrine cells.

See the Full PDF [here](#).



Three steps to meeting photonic device demands in today's market

Photonic integrated circuits (PICs) and laser diodes have the potential to address today's barriers—but only if they can keep pace with market demand.

New technologies like artificial intelligence (AI), augmented and virtual reality (AR/VR), and more offer both opportunities and threats to our industry. From growing internet usage, increasing data center requirements, and the adoption of cloud-based and visualization products to LiDAR needs and consumer electronic drivers, **market demands are placing robust pressure on the existing infrastructure, begging for resolutions to limitations.** [Read More](#)

Enter photonic integrated circuits (PICs) and laser diodes. These technologies, while offering distinct attributes, have the potential to address today's barriers—but only if they can keep pace with market demand.

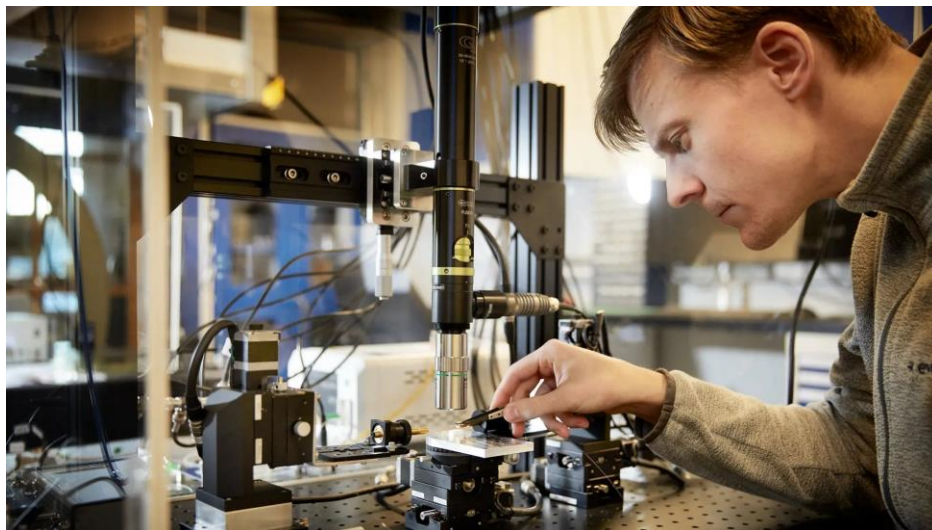


In early September, Optica assembled the PIC and laser diode communities in Bremen, Germany, for the [Photonics Devices Industry Summit](#) with the **goal of exploring these issues.** With the two communities facing **similar problems—packaging, assembly, fiber-to-chip, low-cost back coupling, testing, and automation—collaboration** between the two will enable a more rapid and full-scale approach to industry-wide solutions. As varied vertical markets, including industrial, LiDAR, medical, communications, and automotive, seek photonic-based answers, solving these challenges is a critical industry priority.



Towards interconnecting quantum computers using light and sound on a chip

Interconnecting remote quantum computers may accelerate the development of quantum technologies. But the road there is paved with several challenges. Now a **research team at Chalmers University of Technology** has made **progress towards solving a central problem** in the area - and thus taken a step closer to the **possibility of interconnecting quantum computers using light**.



Quantum computers around the world are becoming increasingly powerful – one qubit at the time. The WACQT quantum computer at Chalmers University of Technology has currently reached 25 qubits and is aiming for 100 superconducting qubits. Developing quantum computers takes time and requires considerable resources, which calls for alternative approaches. At the Division of Quantum Technology at Chalmers University of Technology, **researchers are hence exploring the possibility of connecting remote quantum computers with each other to make better use of the total computing power.** [Read More](#)



NKT is presenting a not-so-technical guide for the curious who wants to learn about optical fibers and lasers but don't want to go into every tiny technical detail

Read the guide if you want answers to the questions:

What are optical fibers?

What is a Photonic Crystal Fiber?

What is a laser?

What is a fiber laser?

What is a supercontinuum laser?

What is a single-frequency laser?

What is an ultrafast laser?

A non-technical guide to NKT Photonics and our technology - NKT Photonics



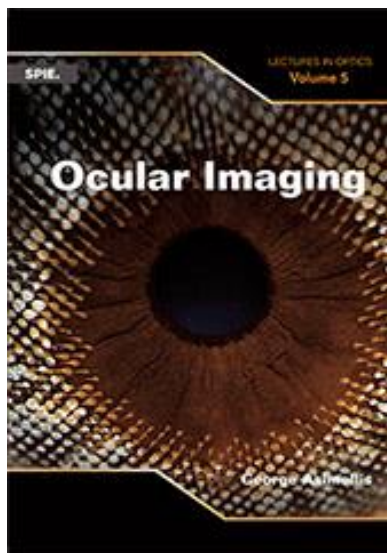
Books & Reviews

Ocular Imaging: Lectures in Optics, Volume 5

By George Asimellis

Estimated Publication Date: 13 December 2023

Pages: 504, ISBN: 9781510622654, Volume: PM297



This fifth volume of the **series *Lectures in Optics*** provides **comprehensive coverage of ocular imaging**, a broad field comprising diagnostic instrumentation that assists in the production of biometric data as well as two- and three-dimensional images of the eye. Aided by developments in digital imaging and computer processing, **ocular imaging has seen explosive growth that has transformed ocular care into a very precise and accurate field, assisting in the diagnosis of several diseases** as well as the **management, planning, and postoperative follow up of several refractive surgical procedures**, such as laser corneal refractive correction of ametropia and cataract surgery / IOL implantation.

Check **Table of Contents** [here](#)

Previous volumes are available as following:

[Visual Optics: Lectures in Optics, Vol 4 \(Press Monographs\): Amazon.co.uk: George Asimellis \(author\): 9781510622616: Books](#)

[Wave Optics: Lectures in Optics \(Volume 3\) \(Lectures in Optics, 3\): Amazon.co.uk: George Asimellis \(author\): 9781510622630: Books](#)

[Geometrical Optics: Lectures in Optics \(Volume 2\) \(Lectures in Optics, 2\): Amazon.co.uk: George Asimellis \(author\): 9781510619456: Books](#)


[Introduction to Optics: Lectures in Optics \(Volume 1\) \(Lectures in Optics, 1\): Amazon.co.uk: George Asimellis \(author\): 9781510619432: Books](#)



CONFERENCES

Paper submissions are open for
[CLEO24!](#)

Submit your breakthrough research in laser science and come present in Charlotte, North Carolina in 2024! Send your research from science and engineering related to lasers, optics and photonics for a global audience of researchers and exhibitors.

 Submit by 21 November: <https://ow.ly/7ev650Q11LF>

 Stay up to date for registration information: <https://ow.ly/1Ae850Q11LK>





CONFERENCES

Optica Biophotonics Congress: Biomedical Optics Fort Lauderdale, Florida USA, 7-10 April 2024

Topics central to this meeting are:

- ❖ novel OCT methods and technologies
- ❖ imaging probes and systems
- ❖ computational modelling
- ❖ image processing algorithms
- ❖ multimodal technologies
- ❖ basic and translational applications

Deadline 05 December 2023

The screenshot shows the website for the Optica Biophotonics Congress. On the left is a sidebar menu with the following items: 'About +', 'Program +', 'Exhibits & Sponsors +', 'Hotel & Travel +', 'Registration +', and 'Submit a Paper -'. Below the 'Submit a Paper' item is a link for 'Conference Papers Policies'. The main content area features a large, colorful, abstract image of biological tissue. Below this image is a purple button labeled 'SUBMIT PAPER'. To the right of the button, the text reads: 'Abstract and Summary Submission Deadline: 5 December 2023 12:00 Eastern Time (US & Canada) (UTC - 04:00)'.

[Submit Paper](#)



Superlum is proud to announce that in January 2024 will be making the trip to San-Francisco, California once again to exhibit at the industry leading [SPIEPhotonicsWest](#) 2024.

Make sure to drop by their **booth 8641 at BiOS** and **4629 at Photonics West**.

Their team will gladly have a chat about their assignments and applications and advise which of their solutions can suit your needs best.



You are also very welcome to arrange a meeting with them in advance by sending a message to sales@superlum.ie.



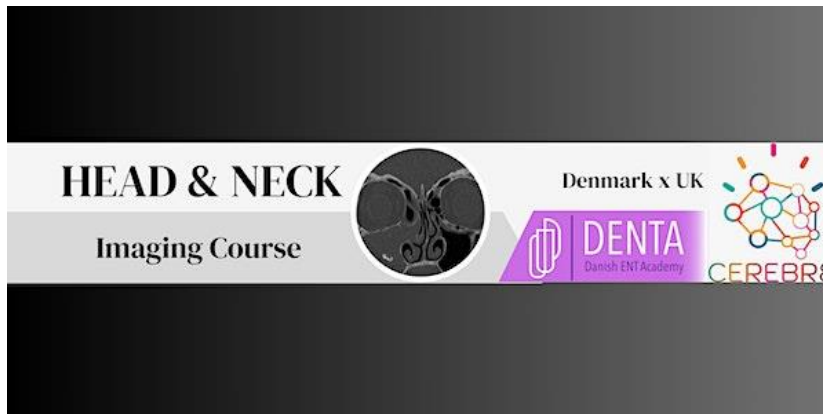
An MDT Approach to Head & Neck Imaging

3-day intensive training course for ENT/radiology trainees and specialists from low-resource settings in Africa and Asia

Wed, 15 Nov - Fri, 17 Nov 2023

Course leaders: Dr Jacob Melchior (Denmark) and **NETLAS Associated Partner Dr Taran Tatla (London, UK)**

[An MDT Approach to Head & Neck Imaging Tickets, Wed 15 Nov 2023 at 09:00 | Eventbrite](#)



Agenda

08:30 - 14:20

**Day 1:
Fundamentals of
Acute Imaging**

08:30 - 17:35

**Day 2: Correlative
Cross-Sectional
Imaging**

08:30 - 17:00

**Day 3: Advanced
Imaging**

To view the full course agenda: entdenmark.com/imaging/. Cerebr8 are live-streaming this course online as a pilot charitable event. They aim to share this 20-year established course for free to ENT/radiology trainees and consultants from low resource settings in Africa and Asia.



Basic Vascular Science meeting

23rd and 24th February 2024

At the 2024 meeting in the Langenbeck-Virchow-House of the German Society of Surgery you will learn from Vascular Biologists, Vascular Surgeons, Cardiovascular Clinicians, Medical and Advanced Imaging Engineers on topics including:

- ❖ Translational aspects of aortic aneurysm diagnosis and treatment
- ❖ Vascular imaging
- ❖ Thrombus formation in COVID and long COVID
- ❖ Translational aspects of vascular access
- ❖ Cardiovascular remodelling

Keynote speakers

[Adrien Desjardins](#), UCL, UK

Recent advances in vascular imaging and blood flow analysis

[Maani Hakimi](#), Lucerne, Switzerland

Different aetiological backgrounds of aortic pathologies

[Margreet de Vries](#), Leiden, The Netherlands

Non-invasive ultra-high frequency ultrasound and photoacoustics imaging: focus on the vessel wall

Workshop

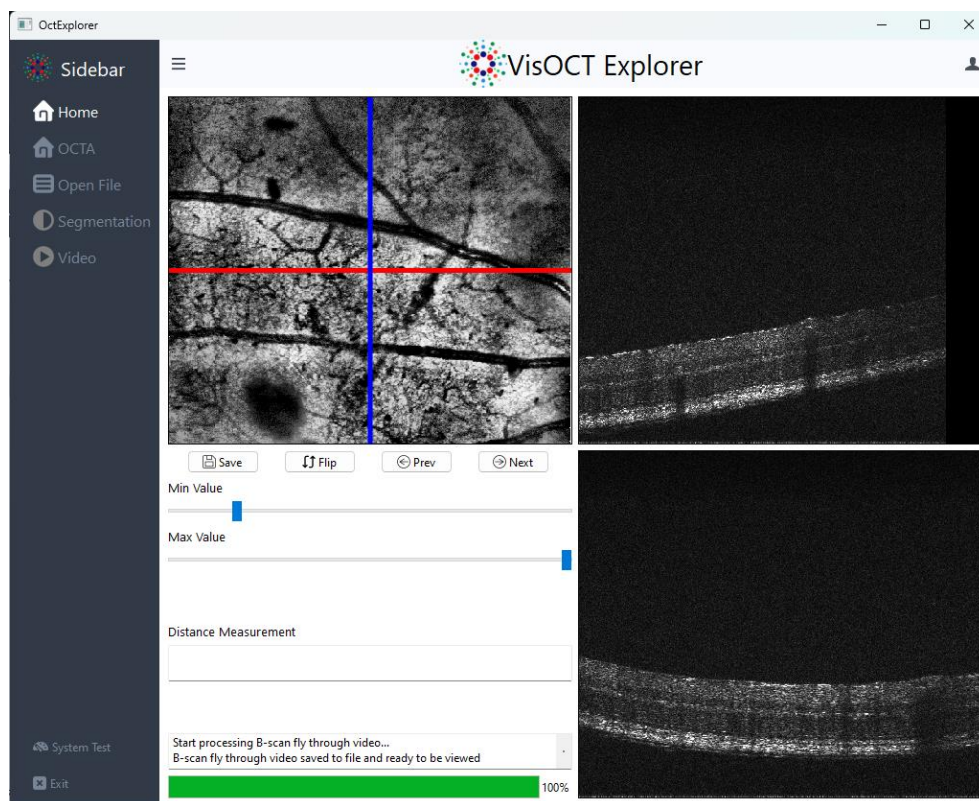
On Friday morning 23 February there will be a workshop '**Advances in -Omics technology**'. Click [here](#) for more information.

[Abstract submission deadline 1 December 2023](#)



Did you know?

VISIBLE-LIGHT OPTICAL COHERENCE TOMOGRAPHY: PYTHON VIS OCT EXPLORER PROJECT



Visible-light OCT image processing software

VisOCT Explorer is a free software aiming to **facilitate ophthalmic research with high-performance OCT image processing capability** for the data from visible-light OCT systems with an easy-to-use graphical user interface. This software is developed and maintained by the [Functional Optical Imaging Lab](#) at [Northwestern University](#).

[Learn More](#)



Did you know?

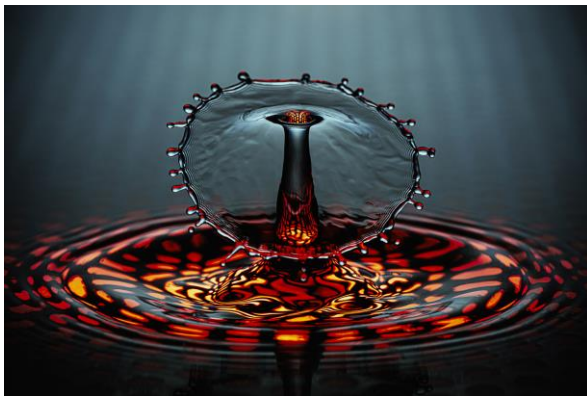
SPIE International Day of Light Photo Contest

Congratulations to 2023 Photo Contest winners!

First Place - Sergey Tolmachev; "**Water**"

Second Place - Steve Tambosso; "**The Lagoon Nebula**"

Third Place - Phuoc Hoai Nguyen; "**Fishing Boat**"

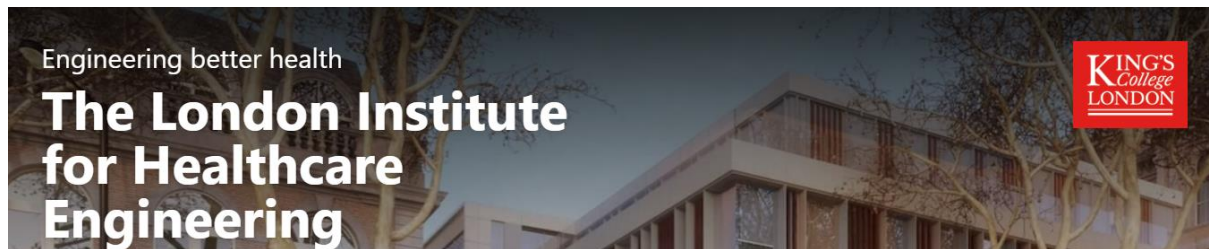


If you're interested in joining the [LightDay2024](#) competition,
submissions are now open.

Learn more here: [SPIE International Day of Light Photo Contest](#)



Did you know?



The London Institute for Healthcare Engineering (LIHE) is the first MedTech venture builder in the UK, ensuring that **research in healthcare engineering is translated rapidly into new products and technologies that will benefit patient outcomes.**

LIHE brings together world-class research and development expertise across academia, the NHS and MedTech companies, in a new building embedded within the St Thomas' Hospital campus.

LIHE is opening its doors to MedTech companies and members from across the UK in February 2024.

Register your interest below to receive their newsletter.

[The London Institute for Healthcare Engineering \(lihe.org.uk\)](https://lihe.org.uk)



Did you know?

10 Important job search tips:

1. **Define Your Goals:** Clearly articulate the type of job you want and your long-term career goals.
2. **Customize Your Resume:** Tailor your resume for each job application, highlighting relevant skills and experiences.
3. **Network:** Leverage your professional and personal networks to discover job opportunities and gain insights.
4. **Use Online Job Search Engines:** Make use of job search websites and platforms like LinkedIn, Indeed, and Glassdoor.
5. **Prepare for Interviews:** Practice answering common interview questions and research the company beforehand.
6. **Stay Organized:** Keep a record of the positions you've applied for and any follow-up actions needed.
7. **Seek Feedback:** Ask for feedback on your application materials and interview performance.
8. **Stay Persistent and Patient:** Job searching can take time, so don't get discouraged and stay persistent.
9. **Stay Informed:** Keep up with industry trends and news relevant to your job search.
10. **Maintain a Positive Attitude:** Stay optimistic and focused on your goal, even in the face of rejections or setbacks.

Follow  [Job Hunters United](#)



University of
Kent

**Job Opportunity at the
University of Kent**

Postdoc: Machine learning for OCT- Raman medical imaging

The title of the project is **Quantitative OCT-Raman spectral imaging for intra-operative detection of positive margins in breast conserving surgery**. This combines two imaging techniques: OCT and Raman. **The physicists on the project are some of the most experienced research in the UK in these fields**. The machine learning algorithms will have to operate during breast conserving surgery, so there are runtime constraints. The algorithms will also have to interface with hardware. **There is an extra statistical complication in that two types of imaging are used, OCT and Raman, and the machine learning algorithms will have to be accurate for the sequential application of these two techniques**. There will be a particular emphasis on reproducibility of the results. All this makes for a set of challenging technical problems, and you will be able to publish and attend conferences throughout this postdoc.

You will be directly supervised by [Prof. Philippe De Wilde](#) from the University of Kent. He has a 30-year track record of signal processing using neural networks, most recently on small-sample electromyographic signals. He has also been Deputy Vice-Chancellor Research & Innovation at the University of Kent and will use this experience to ensure good management of research, ethical standards, as well as innovation relationships in this project. [Read More](#)

[Apply Now](#) - closing Date 13 December 2023



Opportunity for a **Research Scientist in Biophotonics** looking for a two year extendable contract

CNR IFN · Milan, Lombardy, Italy

Role Description

This is a full-time temporary position, with a two-year contract and the option for renewal after the first year, for a **Research Scientist in Biophotonics**. The primary focus will be on **vibrational imaging and spectroscopy**, covering mainly **spontaneous Raman approaches**, but also, eventually, **coherent Raman, FT-IR, Photothermal, and Brillouin approaches**, depending on the candidate's expertise and project requirements.

The contract will be a Research Fellowship (assegno di ricerca), configured as a Post-doc (post-dottorale) (preferred) or Post-grad (post-laurea) position, depending on the candidate's CV. **The successful candidate will be based in Milan** and will **have the flexibility to work from home** (approximately one or two days a week, if necessary, when experiments are not running in the lab).

Responsibilities include **using, optimizing, and potentially developing methods and techniques for label-free imaging and spectroscopy of biological systems**.

The candidate will integrate acquired knowledge, **implement and develop technologies tailored to specific problems in medicine and biology, and work autonomously in sample preparation, data collection, data analysis, reporting, and drafting scientific articles**. Additionally, the candidate should be capable of training and supervising master's students and/or PhD students.

The candidate will work in a highly interdisciplinary environment, collaborating with people with backgrounds in physics, engineering, optics, biomedicine, and data analysis, including AI.

Application

To apply use the [LinkedIn form](#) or just contact renzo.vanna@cnr.it

Deadline

The position will be open until **December 13, 2023**



Did you know?

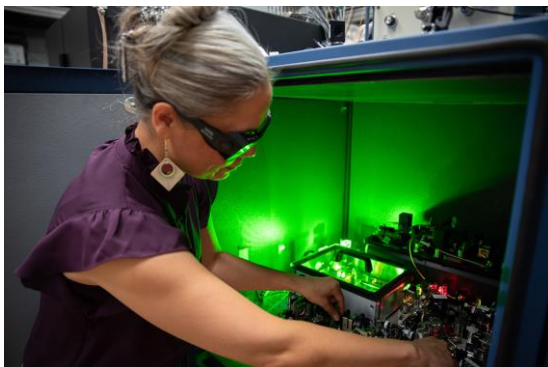
Think You Know What a Second Is? It Will Likely Change in the Next Decade

BY [TARA FORTIER](#)

Measuring and keeping track of time has allowed people to plan and coordinate locally with others for millennia. As the world has modernized and our pace of life has increased, our relationship to time has changed. Time has become a scarce commodity. The standardization of time has also become essential for the stability in power grids and for data synchronization over the internet, global travel, and telecommunications.

In 1960, the second was defined as an international standard unit of measurement for time. Since then, the second has undergone multiple redefinitions. These redefinitions may have happened in your lifetime, and you probably did not notice.

Prior to 1967, the official time reference for the second was the stable but slow rotation of the Earth relative to the cosmos. But Earth's rotation can slow down and speed up based on the gravitational influence of the Moon and the movement of the outer shell of the Earth. **This presents a challenge for accurate timekeeping.** That is why, after 1967, the second's definition changed to one based on the exquisitely stable energy levels in atoms, hence the term "atomic clock."



NIST researcher Tara Fortier aligns optics to maximize the signal coming from an optical clock. The signal is measured by a frequency comb.

The first atomic clocks were developed in the 1940s and became commercially available in the 1960s. Since then, every decade has seen better than a tenfold improvement in timekeeping performance. Now, if you could wait long enough, the best atomic clocks would lose only one second every 15 billion years!

Read More [Think You Know What a Second Is? It Will Likely Change in the Next Decade. | NIST](#)

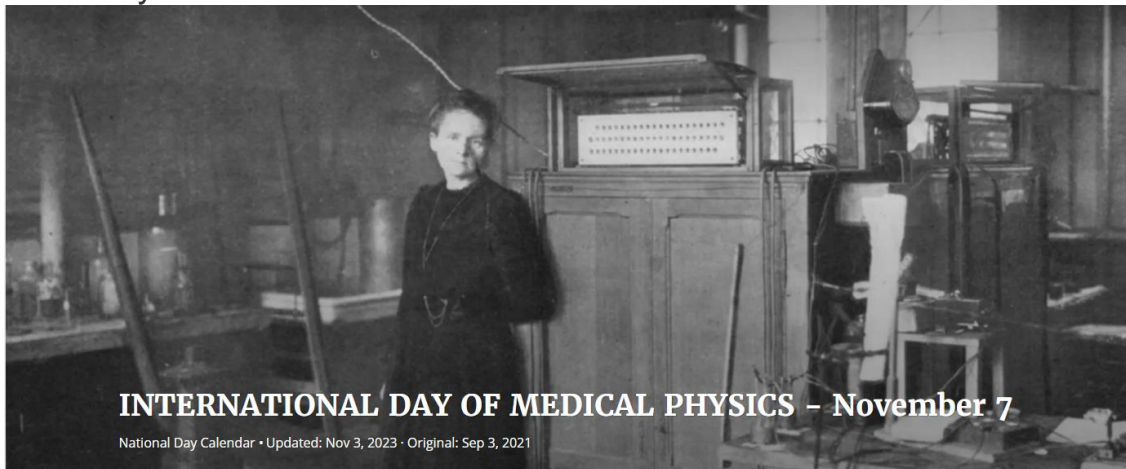


Did you know?

November 7th - INTERNATIONAL DAY OF MEDICAL PHYSICS

Every year on **November 7th**, the International Day of Medical Physics raises **awareness about the role that physics play regarding patient care**. It's also a day to **acknowledge important medical physicists throughout history**.

The International Organization for Medical Physics (IOMP) has organized this annual event since 2012. They chose **November 7th** as on this date in **1867 physicist Marie Skłodowska-Curie was born in Poland**. Also known as Madame Curie, she is best known for her pioneering research on radioactivity.



Every year, medical physicists around the world celebrate this day with live webinars, educational seminars, and conferences.

- Learn more about [how X-rays and other medical imaging tests work](#).
- Read about famous medical physicists in modern-day history, such as [Caridad Borrás](#), [David W Townsend](#), [Dr. Eiichi Tanaka](#), [Maryellen L. Giger](#), and [Godfrey Hounsfield](#)
- Watch the documentary “[The Genius of Marie Curie: The Woman Who Lit Up the World](#)” or the film, “[Radioactive](#).”



Did you know?

[THE NOVEMBER REVOLUTION](#) - NOVEMBER 11,
1974

The Revolution That Shook Particle Physics

The November Revolution began with the discovery of a new subatomic particle, the [J/ψ meson](#). It was discovered independently by two research groups, at **Stanford Linear Accelerator Center** [SLAC](#) and **Brookhaven National Laboratory** [BNL](#), who named it ψ and J respectively. The discovery was announced by both groups together on **11 November 1974**, and the particle's name was combined to J/ψ in order to acknowledge that both groups had equal parts in its discovery. For this discovery, the heads of both research groups, Burton Richter of SLAC and Samuel Ting of BNL, were awarded the 1976 Nobel Prize in Physics.

Before this meson was discovered, we only had evidence for **three types of quarks**: up, down and strange. The importance of the J/ψ meson discovery is that it was the first particle discovered that contained a quark never seen before, the **charm quark**. In fact, the meson is a bound state of one charm quark and one anti-charm quark. The existence of the charm quark was speculated as early as 1964, but this was the first time it was actually seen in an experiment. **This discovery sparked a revolution - the November Revolution, named after the month in which the discovery was announced** - because it showed us a new path towards understanding the structure of matter, namely, that all [hadrons](#), including the familiar protons and neutrons, were actually **composite particles made of quarks**. Before that, many physicists were highly skeptic of the quark model, but the discovery of the J/ψ meson managed to convince most of them of the model's validity. In the years following 1974, major advances in particle physics were made. [Read More](#)

[How significant is the 'November Revolution' in the history of particle physics?](#)
[- Quora](#)

[PDF \(IOP.ORG\)](#)

[Archives and History Office: The November Revolution \(stanford.edu\)](#)
[vol44-issue10-p025-e.pdf \(cern.ch\)](#)



Did you know?

World Diabetes Day is on 14 November 2023

100 years ago, [Frederick Banting and John Macleod won a Nobel Prize](#) for discovering the treatment, which has gone on to save millions of lives around the world - [insulin](#).

However, a first attempt to isolate [pancreatic extract](#) by means of which [blood glucose](#) could be normalized in dogs with diabetes was described by the [Romanian scientist Nicolae Paulescu](#), but his experiments, interrupted by the First World War, never became acknowledged to the extent that they probably should have been.

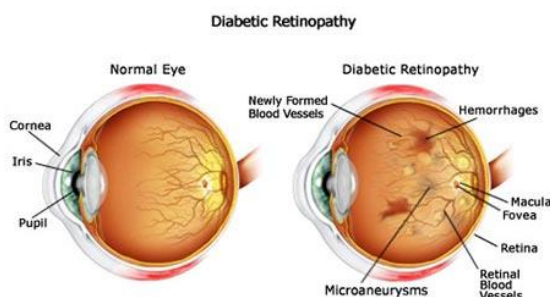
[The history of the Nobel prize for the discovery of insulin - ScienceDirect](#)

Since then, our scientists have made incredible breakthroughs – from helping people with type 1 to make their own insulin, to putting type 2 into remission. And we are getting closer to a cure every day.

What is diabetic retinopathy?

Diabetic retinopathy is a complication of diabetes, which can damage the tiny blood vessels inside the retina at the back of your eye.

The retina is the light sensitive tissue that sends signals to the brain to create eyesight. **Damage to these tiny blood vessels can cause bleeding and swelling in the retina that can affect your vision. In severe cases, it can even cause blindness. Diabetic retinopathy is a progressive condition.** The early stages called NPDR (non-proliferative diabetic retinopathy), can be 'silent', since they might not cause any symptoms.



The Importance of Diabetic Eye Screening

[OCT in diabetic Retinopathy](#)
[\(eyescreening.org.uk\)](https://eyescreening.org.uk)

Optical Coherence Tomography in Diabetic Retinopathy | IntechOpen



Did you know?

International Students' Day

17th November



The International Students' Day is celebrated all around the world on November 17th. However, not a common celebration, this day is commemorated annually as a result of the events that took place in Prague during World War II in 1939. Originally a day to remember the students who died in World War II, today it is held to highlight the importance of education for all students.

The goal of this day is to ensure that every child in the world has access to education. Being an international student in a foreign country is not easy. Having to leave your home and family behind takes courage. International students travel far from their home countries for higher education, which will help them to have a better life and provide for their loved ones.

While university life is difficult for all students, there is no doubt that international students face more challenges. This includes homesickness, cultural differences, financial problems, and language barriers. International Students' Day is a great opportunity to honour students all around the world. It is a day to celebrate multiculturalism, diversity, and cooperation.

But what is the full story behind this celebration? Read more from the links below:

[What is International Students' Day? \(studyinternational.com\)](http://studyinternational.com)

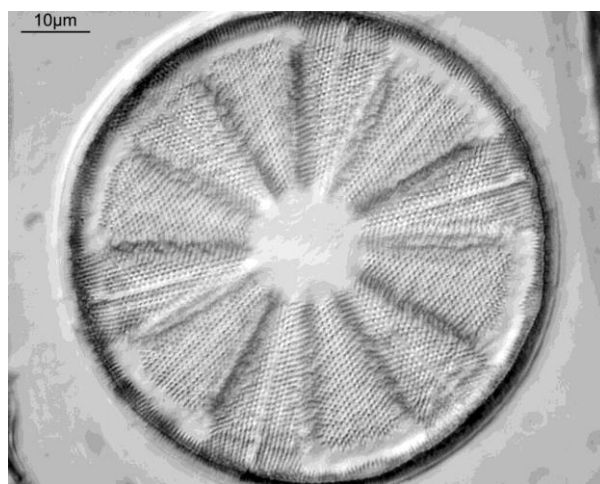
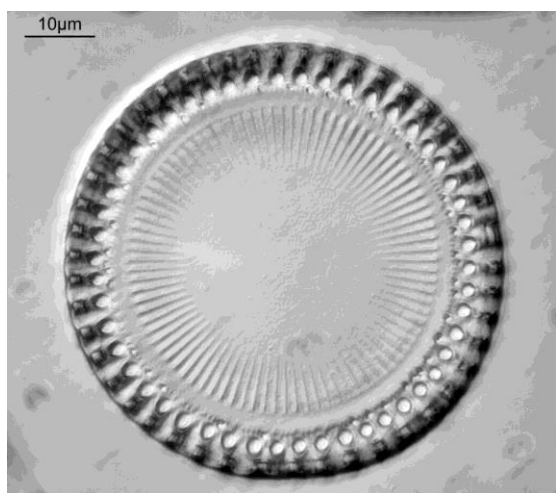
[history_of_the_international_students_day.pdf \(obessu.org\)](http://obessu.org/history_of_the_international_students_day.pdf)

MICROSCOPY – BAUSCH AND LOMB 53X UV REFLECTING OBJECTIVE IMAGING OF DIATOMS

By JONATHAN CROWTHER

Occasionally I like to have a play with some of the **unusual historical UV microscope equipment** I've been fortunate to be able to find, and see whether it can still be used to create images on my Olympus BHB. Last night I got a **Bausch and Lomb 53x NA 0.72 reflecting objective** out of its box and put it on the microscope. Today's post shares some images from it and a bit about the objective itself.

The Bausch and Lomb (B&L) UV reflecting objectives are unusual and rare. I've seen them discussed in a 1958 B&L catalogue, and there were two types – a **53x NA 0.72** and a **x94 NA 1.00** – each along with matching reflecting condensers, and **3.5x and 10x UV eyepieces**. The reflecting objectives and condensers combined quartz and calcium fluoride refractive elements along with mirrors. The 10x eyepiece was quartz, and the 3.5x quartz and calcium fluoride. I'd assumed these were unicorns and would never see them in the flesh, and then I managed to track down a boxed set of the 53x objective and condenser and 10x eyepiece and jumped on it. [Read More](#)



Diatom using the Bausch and Lomb 53x UV reflecting objective.

There are some fascinating historical optical items out there which would have been horrendously expensive to buy when they were originally made. While rare they do crop up occasionally for sale, and that allows people like me to try out a slice of history for my research. As always, thanks for reading, and if you'd like to know more about my work, I can be reached [here](#).



OPTICS & PHOTONICS NEWS



[Optics & Photonics News Magazine](#) [November 2023 Issue](#)

- [What Computer Vision Can Learn from Insect Vision](#)
- [Adaptive Optics: Assessing Vision, Disease and Treatment](#)
- [MXenes for Optics and Photonics](#)

[Browse all Issues](#)



OPTICS & PHOTONICS NEWS

The Value of Patents: It's More than the Money

By Alan Eli Willner

Being an inventor on a patent can carry great weight as part of your credentials.

Do you know who invented the laser? It was a subject of much controversy. After a 30-year battle, the US legal system determined decades ago that Gordon Gould, who is often credited with coining the term “laser,” was the inventor on a key patent for optical pumping to produce amplification that enables lasing.



Supatman / Getty Image

Patents were considered valuable by the giants of our field. For example, Optica Honorary Members Arthur Schawlow and Charles Townes held a 1960 patent that described an optical maser and its use for a communication system. Even Alexander Graham Bell had a patent granted in 1880 for the photophone, a device that employed reflected sunlight to transmit a voice.

These people took patents seriously, and so should you. **Indeed, patents are so important that they are even in the US Constitution:** “*The Congress shall have power ... to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.*”

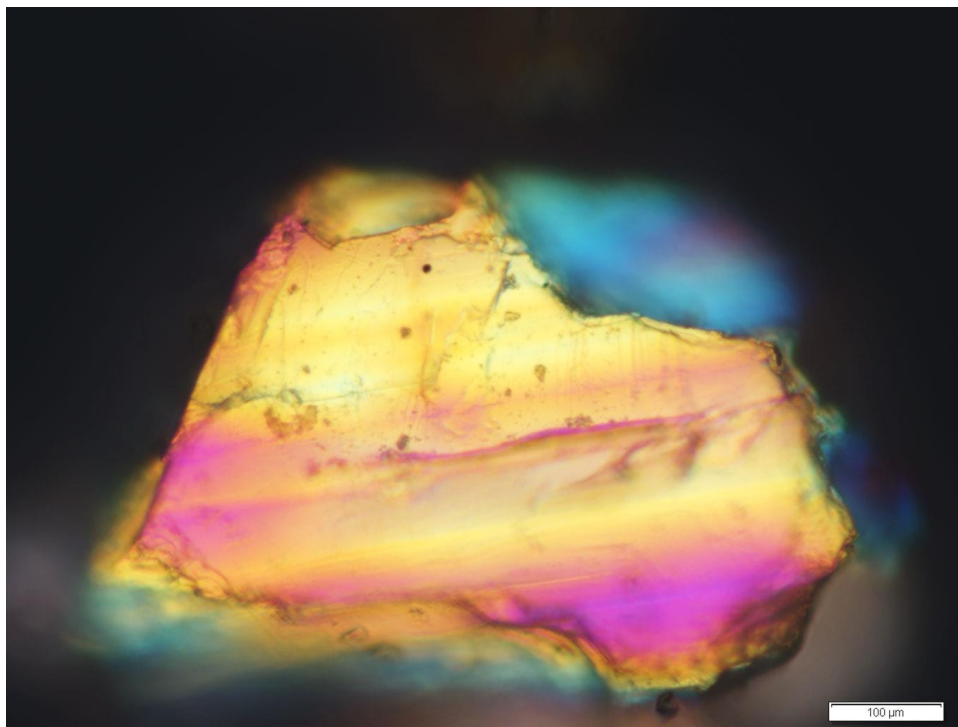
Patent basics

A patent lays out the details of an invention and gives its owners certain legal rights for a period of time. Patent owners can collect royalties when someone else uses the invention or stop anyone from using it altogether. **The most important part of the patent are the claims that describe exactly what the invention is.** Although patent laws differ from country to country, the basic requirements are similar: **the invention should be new, useful and unobvious, and the patent should give enough detail so that a person with relevant skills can reproduce it.** Read the entire article [here](#).

OPTICS & PHOTONICS NEWS

Image of the Week

Striking images of optics and photonics, contributed by OPN readers



Colorful Volcanic Ash

An ash sample from Mexico's Popocatepetl volcano viewed under polarized light shows that volcanic ash is not as gray as it appears to the naked eye. Image captured with an Olympus DP72 camera through an Olympus BX52 microscope with 10× magnification and polarized light technique.

—Baruc Zago Mazzocco, Instituto Nacional de Astrofísica Óptica y Electrónica, Tonantzintla, San Andres Cholula, Puebla, Mexico



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.



[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.](#)



Up Next! Custom Optics Unleashed: Rapid Prototyping and Engineering

When is it appropriate to consider a custom solution? Large wavelength ranges, extreme resolution requirements, and tight packaging constraints are some of the design drivers toward custom solutions. To be able to achieve these requirements and overcome the challenge of lead times, Thorlabs has developed processes to get custom components, designs, and assemblies to their customers quickly. In this webinar, Nate Burdick addresses custom solutions in detail to include fast track quotes, QuickTurn™ optics manufacturing, and priority assembly and testing.

Presented by Nate Burdick, Director of Optical Technologies, Thorlabs Lens Systems



Nate Burdick has worked in the optics industry since 2007 after completing his master's degree in optics at the University of Rochester. He has worked at Thorlabs Lens Systems (TLS) for six years as an optical engineer and is now the director of optical technologies. Burdick is working on upcoming custom optical designs and growing the internal capabilities of TLS.

**Click to
Register!**



An Example of a Diagram Used in
[QuickTurn™ Rapid Optical Prototyping](#).



NETLAS Beneficiary SUPERLUM's offers their **840 nm SLDs** with SM fiber now at a **very competitive price** and **available off the shelf** for one-week shipment.

These products offer **40 nm spectral width at 840 nm and 14-18 mW output power.**

Depending on customer's requirements, the SLDs can be integrated into one of Superlum's drivers.



 **SUPERLUM**
840 nm SLDs

SUPERLUM
recommend their
latest, OCT-inspired
solution: the BLL.

This is the perfect
combination of
affordable price and
reliable quality.

Send them a message
to sales@superlum.ie

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International College for Oxford International Education Group and Kent in UK

The University of Kent and Oxford International Education Group (OIEG) have partnered to create University of Kent International College.



Lil Breermann-Richard, CEO of OIEG pictured with Karen Cox, vice-chancellor and president of the University of Kent. Photo: OIEG

Oxford International Education Group has been selected as a partner by [the University of Kent](#) to help boost international recruitment, as well as enhance global reputation through the establishment of UK IC. To do so, OIEG said it will support the institution's global engagement strategy, informing it with a deep understanding of the varied needs of students and helping deliver a seamless recruitment experience which puts quality first. David Pilsbury, chief development officer at OIEG told The PIE of his delight of partnering with the university that ranks within the top 25% of global institutions and offers award-winning student support.

"This exciting collaboration introduces a dedicated international college in the heart of the University's Canterbury campus, fostering a thriving community while also being less than an hour away from London," he continued.

"Furthermore, it grants access to cutting-edge teaching facilities and a wide array of on-campus student housing options."

The new collaboration marks OIEG's seventh embedded pathway partnership in the UK.



[Our Kent Gleaning Collective has already stopped an impressive 4,500kg of food from going to waste! 🍷](#)

Working with Produced in Kent, the Kent Gleaning initiative sees Kent students volunteer at local farms to harvest produce that would otherwise be thrown away.

The food is then distributed via the [FoodLoop app](#), which connects those who have surplus food with those who need it, including food banks and charities.



[Gleaning Info session - What's on - University of Kent](#)



Happy Birthday to the Pioneer Elisa Leonida Zamfirescu

10 November 1887 - 25 November 1973

Elisa Leonida Zamfirescu made history as **one of the world's first female engineers**. In her 86 years of life, Zamfirescu carved herself a spot in a male-dominated field, led geology labs, and studied Romanian mineral resources.



Determined to follow her interests, Elisa became one of the first women ever to graduate with a degree in engineering, in a time when science was not a girl thing. **Elisa Leonida is often thought of as the first female engineer in Europe, or even in the world. She was certainly the first in Romania, and the first female engineering graduate in Germany.** But the world first goes to Irish Alice Perry who graduated six years earlier with a degree in civil engineering from Queen's College, Galway.

Having notched up that coveted degree, Elisa Leonida turned down a job offer at BASF Germany, and began her career as an assistant at the recently formed Geological Institute of Romania. Soon after, **her career was interrupted by the Great War. Elisa joined the Red Cross and ran several hospitals**, for which she was highly decorated.

After the war, work at the Geological Institute centred around geology. Zamfirescu went from being an assistant to **leading 12 laboratories and participating in field studies discovering new resources of coal, shale, natural gas, chromium, bauxite and copper**. Outside of the Institute, she **found time to teach physics and chemistry** at the Pitar Moş School of Girls, and at the School of Electricians and Mechanics in Bucharest. She was known to **spend many hours training staff and mentoring young chemists** as well as labourers and workers, **giving lectures and courses, and inspiring in them a passion for science**.

Read More [Elisa Leonida Zamfirescu | Europeana](#)

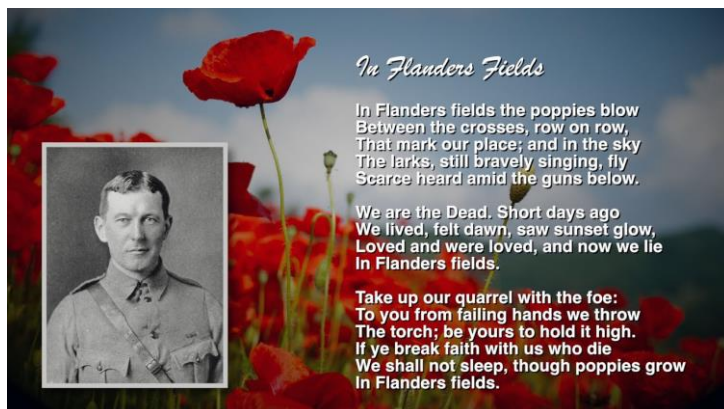


Remembrance: What is it and why is it important?

Remembrance Sunday (also known as Poppy Day owing to the tradition of wearing a remembrance poppy) is a **memorial day** observed in Commonwealth member states **since the end of the [First World War](#) to honour armed forces members who have died in the line of duty** in wars and other military conflicts since the onset of World War I. The day is also marked by war remembrances in several other non-Commonwealth countries. In most countries, **Remembrance Day is observed on 11 November** to recall the end of First World War hostilities. By tradition, a two-minute period of silence is observed throughout the country at 11 AM, and church services and other ceremonial gatherings take place during the day.

What do the poppies represent? During World War One the farms, fields and land in France and Belgium that was fought on was left devastated by battle. All signs of life had been virtually wiped out. **But one of the first plants to reappear on the battlefields after fighting ended were red poppies.** So since then, **the poppy became a symbol of the suffering and sacrifice made by the brave soldiers that fought** in such a terrifying place and that is why they are still used today, when we remember them.

John McCrae's "**In Flanders Fields**" remains to this day one of the **most memorable war poems ever written**. Read More about the [Inspiration for the poem](#).



"The poem was an exact description of the scene in front of us both. He used the word blow in that line because the poppies actually were being blown that morning by a gentle east wind. It never occurred to me at that time that it would ever be published. It just seemed to me to be an exact description of the scene."

Here is the [story of the making of that poem](#).

[John McCrae](#) was born on November 30, 1872. A Canadian doctor and teacher who served in World War I, he is best known for his memorial poem "[In Flanders Fields](#)." He died on January 28, 1918. [Read more poems](#) by John MC Crae.

You can sign up for [Poem-a-Day](#): The only daily poetry series publishing new work by today's poets.



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



AOG Photo taken in November 2023 by PhD Student Julien Camard