



## NETLAS NEWSLETTER 2-2021

This newsletter marks another success of the Marie Curie NETLAS ITN in terms of recruitment this year, we welcome the 11<sup>th</sup> Early Stage Researcher, Mojdeh, to NETLAS!

### PhD8: Mojdeh Vakili Tabatabaei

**Host:** **Technical University of Darmstadt** (TUDA)

**Secondment:** **Tampere University** and **OCTLight**



**PhD Project:**

Development of novel tunable VCSELs based on high electro-optical coefficient material DBR

The project aims for the development of filters based on electro-optical materials and its integration with fibre lasers and VCSELs in order to enable extreme tuning ranges. Finally, their application in increasing the depth resolution of Optical Coherence Tomography (OCT) systems will be tested.

**Previous education:**

BSc, Electrical Engineering, Sharif University of Technology- Iran, (2010-2015)

MSc, Electrical Engineering (Micro and Nano Electronic Devices), University of Tehran- Iran, (2015-2018)



## **Students led conference**

# **Optics and Photonics for Scientific Progress**

**#OPSP2021**

### **13th -14th April 2021 - Two days of talks, networking and workshops**

An event organised by two student chapters of the Optical Society (of America)- (OSA), representing the Applied Optics Group (AOG) at the University of Kent and the BioPhotonics Group at the University of Surrey, took place on April 13th and 14th, and supported by the South – East Physics Education Network (SEPnet) and the OSA.

Conference was opened by Professor David Sampson, Pro-Vice-Chancellor, Research & Innovation at University of Surrey and by Professor Shane Weller, Deputy Vice-Chancellor - Research and Innovation at the University of Kent that presented the two universities, their traditional links and congratulated the organizers.

Planning OPSP2021 took over a year from its earliest conceptions, having its origins as an idea for a one-day event focused on employability and career development for students. It aimed to bring the optics and photonics research community together for talks, workshops and a poster session. The connection between both Chapters was facilitated by Yann Amouroux, Director of OSA Europe. Soon, the idea was adopted by Julien Camard, PhD student within AOG, who further developed the idea into a plan for a full 2-day conference aimed at enhancing optics in science, which he proposed to the SEPnet and successfully won funding with.

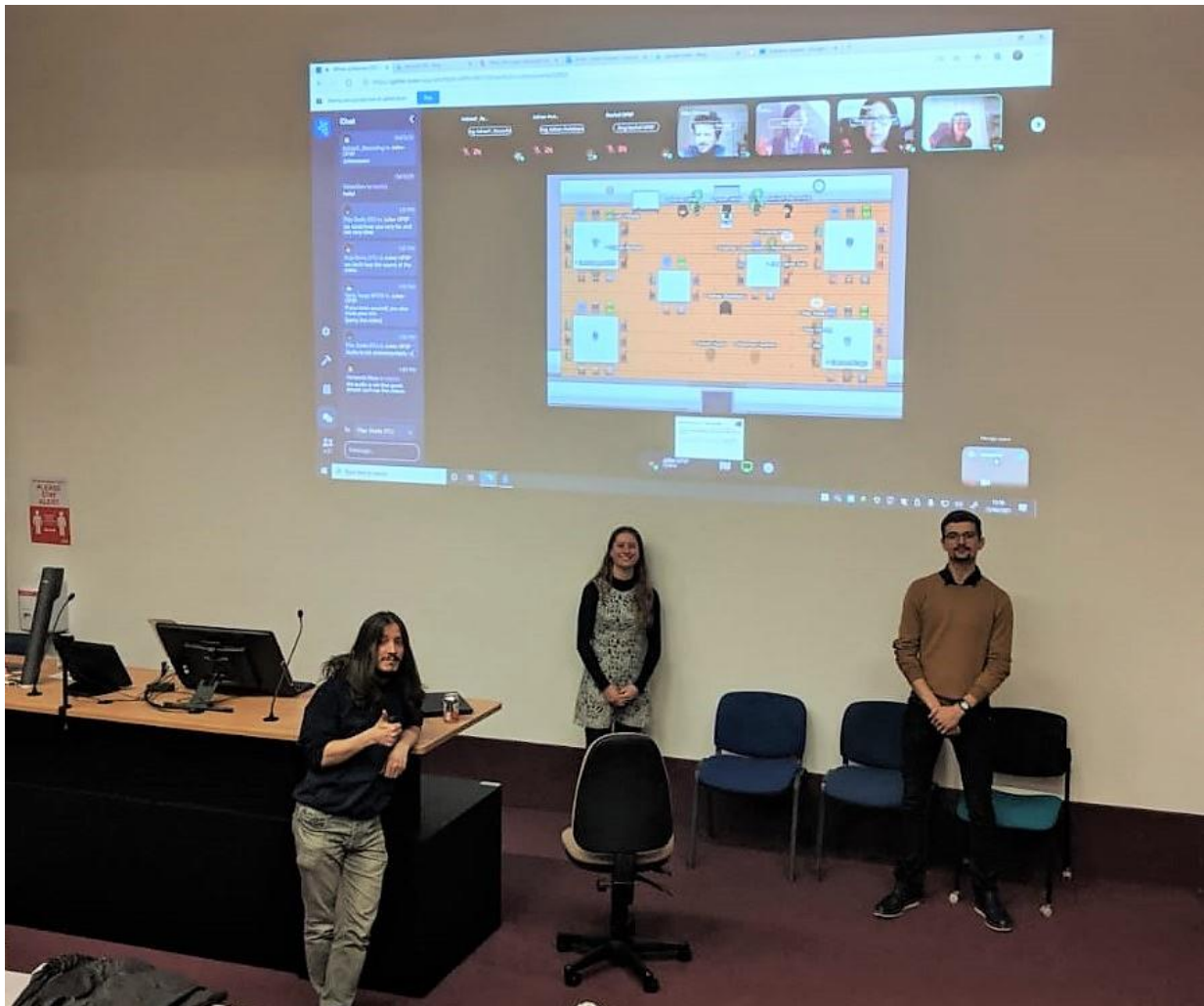


As time progressed, the overhanging pandemic continued in its potency and the organisers eventually made the decision to begin planning for a virtual conference. The task before them was challenging, how to orchestrate an engaging, enjoyable, and informative conference for attendees who would ultimately be staring at a screen for the whole time? The solution was to create a virtual conference space, to simulate a real conference and not just host another series of zoom meetings! This was possible using 'gather.town', an online resource that enabled them to create a virtual world in which to host the event.


The result, "was amazing", said an attendee. Another one has remarked that the "environment was very informal and laidback, which made everything very enjoyable." The use of 'gather.town' was particularly popular, with one guest saying it was a "brilliant way to make virtual conferences not to be boring."



The event comprised 10 talks, 6 workshops and a student poster session. The talks covered a wide range of optics topics, including Optical Coherence Tomography, integrated photonics, Brillouin spectroscopy, eye imaging, the transition from academia to industry, and the other way around. The workshops, in smaller groups, provided students' knowledge and skills in topics like science communication, computing and navigating the job market. The talks covered several fields of optics/photonics. The detailed schedule and list of speakers are available here: [OPSP2021 - Speakers \(google.com\)](#).

The SEPnet student-led conferences are an annual series of networking events created and -organized by postgraduate students from SEPnet universities. The scheme awards students with the funding and guidance necessary to create a 2-day conference on a subject of their own liking. The event accumulated a total number of 99 visitors throughout, and a concurrent peak of 41.



*Part of the team at the University of Kent, monitoring the event from a lecture theatre*



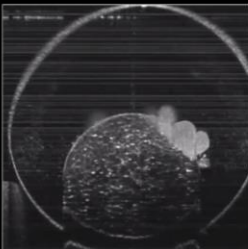
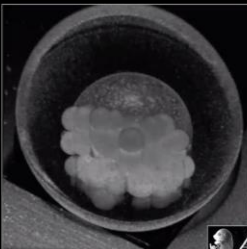



## Preparing a successful 3MT talk

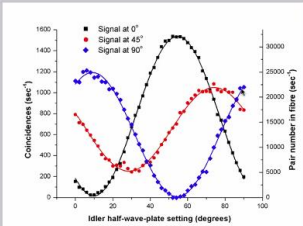
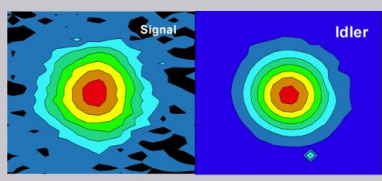
**Gabrielle Untracht**  
Optics and photonics for scientific progress  
14 April 2021

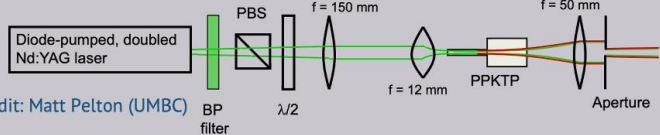
## Biophotonic investigation of early embryonic development

**Irina V. Larina**  
Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, USA





## Postdoc 1: Kungliga Tekniska Högskolan Polarisation-entangled photon pair generation



Credit: Matt Pelton (UMBC)



Dr. Phil Marsden

## OPTICAL FINGERPRINTING — AGE

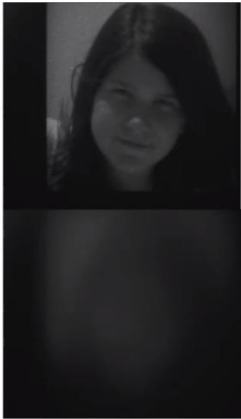
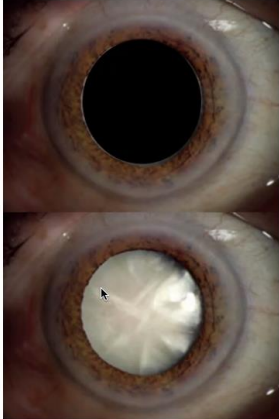






Dr. Gabrielle Thomas




### Cataracts



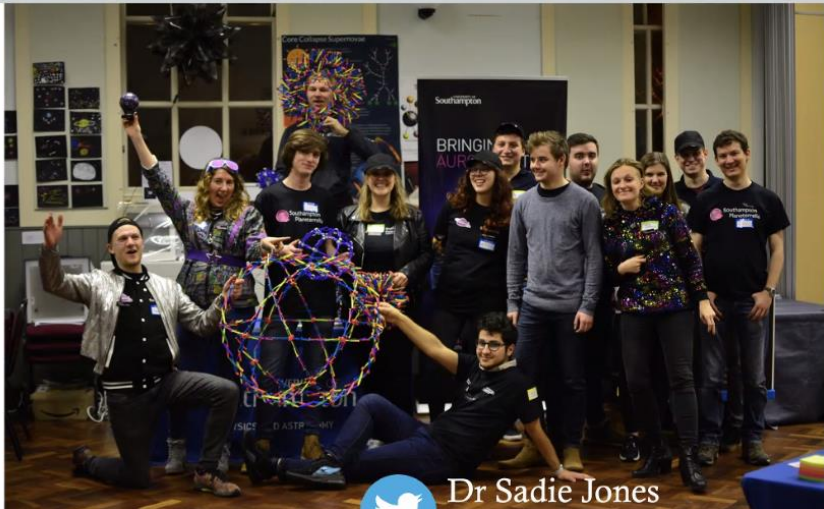
Prof. Pablo Artal



Sadie Jones

## Doing Outreach is Life Changing!

UNIVERSITY OF Southampton



Dr Sadie Jones

*OPSP2021 featured a great variety of talks and workshops*

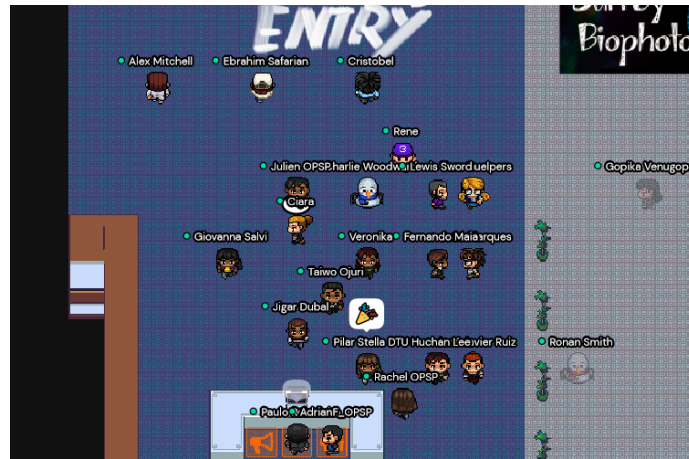


The team of students also thrived in hosting a multinational event. Going virtual meant they were able to secure speakers from around the world, with some joining from as far as Canada, Mexico, and the US. Likewise, international attendees were able to join effortlessly, for free, and at a fraction of the usual CO2 costs normally incurred in traveling to an international event.

One of their initial goals in organizing the conference was to strike a balance between academic presentations/industry professional career guidance with a range of personal development workshops. They were proud to have executed this well, having “many different topics” said an attendee.

A prominent feature of the conference was the shared poster session, which took place in ‘gather.town’. The cohort of optics posters were merged with entries from another conference run in parallel to OPSP 2021. This extended the networking to include particle physics students. Attendees mingled amongst the posters as they would in real life, much to their enjoyment. Deserving of congratulations are the team of students that made OPSP2021 happen, from AOG Kent: Julien Camard, Rachel Sully, Adrian Fernandez Uceda, Alejandro Martinez Jimenez (NetLaS student) and Hal Dorrington; from Surrey: Gavrielle Untracht and Abdullah Durrani. The students want to acknowledge Cristobel Soares, SEPnet Graduate Network Manager who has given them guidance and inspiration throughout.

Hal Dorrington, member of the organizing committee said: “I had the opportunity during the conference to chair a panel discussion featuring eminent scientists. To be given the opportunity to demonstrate professionalism and to be part of such a knowledgeable discussion was a brilliant experience, one which without running a SEPnet conference I would not have been granted. All of us members of the team have learnt a lot from stepping up to the challenge of running a conference and we are so much more confident now as a result. Reflecting on our experience, we can say that it has been a lot of work, but overall, it has been very rewarding and has left us proud of our accomplishment. The process of inviting speakers to the conference was a great opportunity to network and build connections with renowned researchers.”



### *Announcement of the poster session winners in gather.town*

At the end of the session, attendees made their way to a main stage, where the winners were announced. The winners are as follows, congratulations to All!



"Judges Choice" joint poster prize winner: Paulo Robalinho from [Univ of Porto](#), for his poster "New combination of Push-Pull Method and Vernier Effect for Colossal Strain Sensitivities".



"Public Choice" theory poster prize winner: Meirin Oan Evans from [Sussex Uni](#), for his poster "Machine Learning for ttZ 2l"



"Public Choice" optics poster prize winner: Anja Borre, [DTUtweet](#), for her poster "A Journey Into the Crypts, Improving Imaging Depth for Early Diagnosis of Colorectal Cancer"

Running a SEPnet conference is a rare opportunity to gain great confidence and proficiency at interfacing with professionals in the field. If you are considering applying to lead a student conference – do it! Say yes and grow!





## Dissemination & exploitation of project results

### Official launch of Open Research Europe (ORE) –

### The European Commission's open access publishing platform

The European Commission has now officially launched Open Research Europe, the open access publishing platform for scientific articles that present the results of research funded by Horizon 2020, and soon Horizon Europe. The first articles submitted have already been published. Open Research Europe champions open science principles by immediately publishing articles, followed by transparent, invited and open peer review with the inclusion of all supporting data and materials. The names of the reviewers are open, as well as their reviews, which are also citable. Article-level metrics will continuously track the scientific and social impact of publications. Ultimately, Open Research Europe will give everyone, researchers and citizens alike, free-of-charge access to your latest scientific discoveries.

As Horizon 2020 NETLAS researchers, we are eligible to publish research articles stemming from NETLAS research on this platform. The platform accepts articles in all fields of science including the natural sciences, engineering and technology, medical and health sciences, agricultural and veterinary sciences, social sciences, humanities and the arts. The platform displays a variety of article types ranging from research articles to methods and essays.

Open Research Europe is not a repository to deposit papers already published somewhere else: research submitted there must be original, not be submitted anywhere else for publication, and stem from a Horizon 2020 grant in which at least one of the authors is involved. Publishing in Open Research Europe is an optional service. Because the **European Commission covers all costs upfront, there is no author fee**, which means also no administrative burden. Moreover, there is the guarantee of automatic



compliance with the open access requirements of Horizon 2020 and Horizon Europe. Lastly, Open Research Europe is also a solution to publish articles even after the Horizon 2020 grant has ended.

To learn more about Open Research Europe, please visit the platform, which contains helpful tips and guides, including how to prepare articles and data for submission. The article guidelines cover the specific guidelines for research in Science, Technology, Engineering, Medicine, Social Sciences, Arts and the Humanities. You may also follow the Twitter account @OpenResearch\_EU.

## **AOG research on the cover of Optics & Photonics News (OPN)**

### **Forensic Problems, Optical Solutions - A passport is resolved by the OCT system**

Researchers in applied optics, forensic science and the document-examination industry have joined forces to apply OCT to the high-resolution subsurface analysis of multilayered identification documents (Sci. Justice, doi: 10.1016/j.scijus.2020.12.001). The method can reportedly detect forged passports or national ID cards in a matter of seconds—without compromising evidence.

Molly Moser article can be found at [Forensic Problems, Optical Solutions | Optics & Photonics News \(osa-opn.org\)](https://osa-opn.org/Forensic-Problems-Optical-Solutions/)

## —Newsroom



Courtesy of Manuel J. Marques

### IMAGING

## OCT in Forensics

U.K. researchers have applied optical coherence tomography (OCT) to the high-resolution subsurface analysis of multilayered identification documents [Sci. Justice, doi: 10.1016/j.scijus.2020.12.001]. The method can reportedly detect forged passports or national ID cards in a matter of seconds—without compromising evidence.

After obtaining sample documents from an ID manufacturer, the researchers analyzed them using a swept-source OCT system. In their setup, light from a tunable laser splits between the reference path and the object path. Once light returns from both paths, it is recombined and detected by a photodetector, creating a 1D depth profile. This information is then combined with data from X/Y scanners to create a 3D representation of the sample.

In this way, the team virtually dissected a specimen passport and national ID card without any physical interaction. Furthermore, the technique's imaging throughput is quite high, with a high-density volume (100×500 lateral points) typically taking less than 10 seconds to acquire. —Molly Moser

[www.osa-opn.org/news/0421-forensics](http://www.osa-opn.org/news/0421-forensics)



Joanne Stephan

### SECURITY

## Diamonds and Cryptography

Researchers have shown how the photons used to create secret cryptographic keys could have their polarizations randomly oriented at source by generating the photons in a piece of diamond. This could potentially make cryptographic systems simpler and more secure (Opt. Express, doi: 10.1364/OE.410287).

Generating truly random states of light's polarization is essential to many implementations of quantum cryptography, but doing so currently relies on complex external equipment. The idea with the latest work is to ensure that the relevant photon property, polarization, is in a random state to begin with.

The researchers did this by exploiting stimulated Raman

scattering. They fired intense 532-nm laser pulses at an 8-mm-long piece of diamond in an optical cavity, which set the material's crystal lattice vibrating and generated photons at 573 nm. Those photons stimulated the emission of even lower-frequency photons, whose polarizations are described by a single coherent state.

The team recorded these polarizations and found that, as predicted, the polarization orientations formed a smooth distribution between 0 and 90 degrees. They also discovered that they could tune the degree of randomness by rotating the polarization of the incoming laser pulses away from diamond's axis. —Edwin Cartledge

[www.osa-opn.org/news/0421-dia](http://www.osa-opn.org/news/0421-dia)

## In the Spotlight ...

Here is some interesting research recently highlighted in OSA Publishing's *Spotlight on Optics*:



Alessandro Tuniz and Markus A. Schmidt discuss a *Photonics Research* study on **fabrication of a nanofocusing plasmonic waveguide** at the end of an endlessly single-mode photonic crystal fiber.



Nils Bartels looks at an *Applied Optics* paper in which the authors share results of their efforts to **mitigate laser-induced contamination on optics of the Allegra laser system** at ELI Beamlines.

For more on this and other research in the spotlight, check out [www.osapublishing.org/spotlight](http://www.osapublishing.org/spotlight).





## Talks of interest to the NETLAS Community at Photonics West 2021

Watched and recommended by Simon Lotz and Marie Klufts

University of Lübeck, Institute of Biomedical Optics, Germany

1. S. Lotz, C. Grill, M. Göb, W. Draxinger, J. P. Kolb, R. Huber, "**Characterization of the dynamics of an FDML laser during closed-loop cavity length control**," Proc. SPIE 11665, Fiber Lasers XVIII: Technology and Systems, 1166519 (5 March 2021)

*A novel control mechanism is presented which controls the cavity length of FDML Lasers to achieve a fixed filter frequency during sweet-spot-operation (low intensity noise operation).*

2. Christin Grill, Torben Blömker, Mark Schmidt, Dominic Kastner, Tom Pfeiffer, Jan Philip Kolb, Wolfgang Draxinger, Sebastian Karpf, Christian Jirauschek, Robert Huber, "**A detailed analysis of the coherence and field properties of an FDML laser by time resolved beat signal measurements**," Proc. SPIE 11665, Fiber Lasers XVIII: Technology and Systems, 116651A (5 March 2021)

*These measurements suggest the existence of a distinct comb like mode structure of the FDML laser and help to determine the locking strength of individual modes (comb lines).*

3. Tom Pfeiffer, Thomas Klein, Alexander Mlynek, Wolfgang Wieser, Simon Lotz, Christin Grill, Robert Huber, "**High finesse tunable Fabry-Perot filters in Fourier-domain modelocked lasers**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116301J (5 March 2021)

*The coherence roll-off and dynamic range of OCT systems using Fourier-domain mode-locked (FDML) lasers can be significantly improved by a fiber Fabry-Perot tunable filter (FFP-TF) with a finesse of more than 3000, a more than fivefold improvement over previous designs.*



4. Anja Britten, Philipp Matten, Michael Niederleithner, Jakob Weiss, Wolfgang Drexler, Rainer A. Leitgeb, Tilman Schmoll, "**Versatile MEMS-VCSEL SS-OCT engine: full eye biometry to 4D imaging at MHz A-scan rates**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116300K (5 March 2021)

*Flexible OCT engine for acquiring full eye-length, anterior and posterior segment B-scans, as well as 4D live volumes with an effective A-scan rate of up to 2MHz, enabled by a MEMS tunable VCSEL with flexible A-scan rates, broad spectral bandwidth and a long instantaneous coherence length.*

5. Destiny Hsu, Ji Hoon Kwon, Arman Athwal, Yusi Miao, Yifan Jian, Marinko V. Sarunic, Myeong Jin Ju, "**Effective scanning protocol for optical coherence tomography and angiography using a 1.6 MHz Fourier domain mode-locked laser source**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116301L (5 March 2021)

*Effective 1.6 MHz stepped bi-directional scanning protocol, allowing 2 BM-scan OCT-angiography (OCTA) imaging using high-speed FDML*

6. Pablo Ortiz, Mark Draelos, Ryan P. McNabb, Amit M. Narawane, Christian Viehland, Anthony N. Kuo, Joseph A. Izatt, "**Autoaligning and autofocusing robotic optical coherence tomography of the retina for subject motion, gaze, and defocus compensation**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116300H (5 March 2021)

*We have developed a robot-mounted OCT scanner that automatically focuses and aligns with the subjects' eye by compensating motion, gaze, and refraction error.*

7. Amy Roche, Svetlana Slepneva, Uday Gowda, Anton Kovalev, Evgeny Viktorov, Alexander Pimenov, Andrei Vladimirov, Mathias Marconi, Massimo Giudici, Guillaume Huyet, "**Defect mediated turbulence in a long laser**," Proc. SPIE 11671, Real-time Measurements, Rogue Phenomena, and Single-Shot Applications VI, 116710D (5 March 2021)





*In this paper, we experimentally and theoretically analyse the formation and interaction of dark solitons in a long laser.*

8. Amy Roche, Uday Gowda, Anton Kovalev, Evgeny Voktorov, Alexander Pimenov, Andrei Vladimirov, Mathias Marconi, Massimo Giudici, Guillaume Huyet, Svetlana Slepneva, **"The formation of localised structures from the turn on transient of a long laser,"** Proc. SPIE 11680, Physics and Simulation of Optoelectronic Devices XXIX, 116800N (5 March 2021)

*This paper aims to characterise, both experimentally and theoretically, the dynamics which occur during the turn on transient of a long cavity semiconductor laser.*

9. Aritra Roy, Saroj Kanta Patra, Svetlana Slepneva, Anton Kovalev, Konstantin Grigorenko, Natalia Rebrova, Alexis Verschelde, Amy Roche, Mathias Marconi, Massimo Giudici, Evgeny Viktorov, Tomasz Piwonski, Guillaume Huyet, **"Effect of feedback on multi-section semiconductor swept-source laser for OCT applications,"** Proc. SPIE 11680, Physics and Simulation of Optoelectronic Devices XXIX, 116800P (5 March 2021)

*We present here a combined theoretical and experimental study to investigate the influence of external optical feedback in a semiconductor swept-source laser.*

10. Ryan P. McNabb, Pablo Ortiz, Kyung-Min Roh, Mark Draelos, Charlene James, Stefanie G. Schuman, Glenn Jaffe, Joseph A. Izatt, Anthony N. Kuo, **"Robotically aligned optical coherence tomography for socially distanced clinical ophthalmic imaging,"** Proc. SPIE 11623, Ophthalmic Technologies XXXI, 116231E (5 March 2021)

*We developed a robotically aligning OCT (RAOCT) system that provides volumetric retinal images encompassing both the optic nerve head and fovea.*

11. Andreas Wartak, Yuxiao Wei, Ara Bablouzian, Paola Leon Alarcon, Keval Bollavaram, Osman Ahsen, Edward Farewell, Schuyler VanTol, Alfred Kelada, Abigail Gregg, Aaron Baillargeon, Patricia Grahmann, Joseph Gardecki, Guillermo J. Tearney, **"Multimodality optical coherence tomography based tethered capsule endomicroscopy for upper gastrointestinal tract imaging,"** Proc. SPIE 11630, Optical Coherence



Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116300P (5 March 2021)

*We introduce two multimodal extensions of our OCT based tethered capsule endomicroscopy (TCE) platform, tailored towards an enhanced clinical applicability for upper gastrointestinal tract imaging: white light (RGB)-OCT-based TCE and fluorescence (FL)-OCT-based TCE.*

12. Hyeon-Cheol Park, Cadman L. Leggett, Dawei Li, Kenneth K. Wang, Xingde Li, "**Comparison between 1300 nm and 800 nm OCT imaging of ex vivo human esophageal tissues**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116300U (8 March 2021)

*The feasibility of ultrahigh-resolution OCT capsule endoscopy working at 800 nm was demonstrated by imaging ex vivo freshly resected human esophageal tissues, and its performance was compared with conventional volumetric laser endomicroscopy (VLE) working at 1300 nm.*

13. Hui Min Leung, Linhui Yu, Devon M. Thompson, Yi Sun, Abigail L. Gregg, Joseph A. Gardecki, Russell W. Jenkins, Oliver Jonas, Guillermo J. Tearney, "**Applications of dynamic micro-optical coherence tomography**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 116301A (5 March 2021)

*In this work, we have expanded the application of dynamic micro-OCT to encompass imaging of human skin in vivo, and detection of pharmacologic-induced changes in human melanoma spheroids and murine tissues.*

14. Michael F. Kaschke, "**Ophthalmic OCT: New Applications in its 4th decade**," Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV, 1163003 (7 March 2021)

*This presentation is focusing on Photonics Technologies around OCT, functional imaging, and devices miniaturization.*

15. Michael Niederleithner, Anja Britten, Philipp Matten, Niranchana Manivannan, Aditya Nair, Lars Omlor, Wolfgang Drexler, Rainer Leitgeb, Tilman Schmoll, "**3D-Unet deep learning algorithm for denoising OCTA**



**volumes acquired at MHz A-scan rates,"** Proc. SPIE 11623, Ophthalmic Technologies XXXI, 1162319 (5 March 2021)

*In OCTA volumes small vessels with an orientation perpendicular to the image plane are often removed by deep learning denoising algorithms, due to their small appearance. To overcome this a 3-dimensional Unet was developed to utilize volumetric information.*

16. Zohreh Hosseinaee, Nima Abbasi, Alex Tummon Simmons, Layla Khalil, Kevan L. Bell, Parsin Haji Reza, "**Dual-modality photoacoustic remote sensing (PARS) microscopy and swept-source optical coherence tomography (SS-OCT) for in-vivo imaging,**" Proc. SPIE 11642, Photons Plus Ultrasound: Imaging and Sensing 2021, 1164232 (5 March 2021)

*A dual-modal optical imaging system combining PARS SS-OCT is presented. Volumetric images were acquired from carbon fibers and in-vivo biological tissues. To our knowledge, this is the first study demonstrating a combination of SS-OCT with optical-resolution photoacoustic microscopy for in-vivo, non-contact imaging of tissues.*

17. Aritra Roy, Saroj K. Patra, Tomasz Piwonski, "**Design and fabrication of low-cost tunable semiconductor swept-source lasers at 850 nm,**" Proc. SPIE 11682, Optical Components and Materials XVIII, 116820P (5 March 2021)

*We report the development of a low cost, compact, semiconductor swept-source laser based on slots etched along the ridge. The laser consists of a central gain section, phase section, semiconductor-optical-amplifier (SOA) sections and mirror sections employing higher-order gratings.*



## Latest Photonics News and Products this Week - 8 April, 2021

**OCTLight** - high-tech company developing and selling VCSEL OCT Swept Laser to Medtech companies, **NetLas Associated Partner**, was presented as the Latest Photonics News and Products on 8th April, 2021.


Latest Photonics News & Products - 8 April, 2021 [View it in your browser](#)

**GO Photonics** Date: 8 April, 2021

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### New Photonics Products this Week




1060 nm MEMS-VCSEL Laser for 3D Optical Imaging

Laser from OCTLIGHT

The VCSEL Swept Source Caliper from OCTLIGHT is a MEMS-VCSEL Laser that operates at an output wavelength of 1060 nm. It is developed for OCT imaging in the diagnosis and treatment of eye diseases. The laser has an optical power of over 15 mW. It has a sweep range of over 20 nm at 10 dB and a bi-directional sweep rate of 1700 kHz.

[Download Datasheet](#) | [Product Details](#)



2 W Single Mode Frequency Converted Fiber Lasers for Atom Cooling

Laser from Keopsys by LUMIBIRD

The CVFL-KILO Series from Keopsys by LUMIBIRD are Single Mode Frequency Converted Fiber Lasers that are designed specifically for atom cooling applications. They operate at a tunable wavelength from 530-560 nm, 630-650 nm, and 767-790 nm. These random/linearly polarized lasers provide an output power of up to 2 W and can be controlled via touch-screen, Ethernet, and TTL logic interfaces.

[Download Datasheet](#) | [Product Details](#)



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.



### **Coming Soon! Polarization-Sensitive Optical Coherence Tomography**

In this webinar, Drs. Matthias Pues and Pablo Stickar of the Thorlabs Optical Coherence Tomography (OCT) Team will describe the working principle of polarization-sensitive optical coherence tomography (PS-OCT) and demonstrate it with measurements of an everyday object. We will then discuss the anisotropy traits in the samples that PS-OCT reads out and provide application examples.



Presented by Dr. Matthias Pues, Project Manager, and Dr. Pablo Stickar, Development Engineering Expert, Thorlabs OCT Team

**Click to Register!**







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## 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](mailto:R.Cernat@kent.ac.uk) and to Adrian Podoleanu: [ap11@kent.ac.uk](mailto:ap11@kent.ac.uk)