NETLAS NEWSLETTER 1-2021

First newsletter of the 2021
We have been through a turbulent year, Pandemic continues as well as reverberations of the recent Brexit deal, with effects in moving equipment across borders.

This newsletter marks a first success in terms of recruitment this year, we welcome the 10th ESR, Andrey, to NETLAS!

PhD1: Andrey Anikeev

Host: Superlum Diodes
Secondment: Tampere University (TAU)

PhD Project: High power Master Oscillator Power Amplifier (MOPA) devices

Development of broadband, high-power, and tunable light sources for OCT, requires novel approaches to achieve wide bandwidth semiconductor lasers and amplifiers operating in a wide range of wavelengths. Novel in plane semiconductor sources and amplifiers will be developed, capitalizing on leading expertise at Tampere University and Superlum Diodes Ltd. In particular, semiconductor optical amplifiers (SOA) with optical bands approaching 150 nm and high saturation powers will open novel avenues in a multitude of directions for the technology of swept sources. SUP seeks the improvement of their SOA bandwidth by:

a) concatenation of multiple quantum-well (MQW) structures with different, non-overlapping spectral gain peaks;

b) extending the anti-reflection coating bandwidth of SLDs chips;

c) modifying the geometry of the SLD chips.

Education

2011 – June 2015 National University of Science and Technology Moscow Institute of Steel and Alloys (NUST MISiS) – Bachelor of Material Science

2015 – June 2017 National University of Science and Technology Moscow Institute of Steel and Alloys (NUST MISiS) – Master of Material Science
During the last 4 years, I have been working at Ltd Opton, I have been studying superluminescent diodes (SLDs) in the spectral range of 635 – 690 nm. We were able to create a tunable laser with a tuning range of 673-690 nm and a power of 10 mW. And also demonstrate a broadband light source with a spectrum width of up to 30 nm centered at about 665 nm.

NETWORK EVENTS

First cross NETLAS talk delivered by the 1st recruited ESR, Philipp Tatar-Mathes, recruited in Tampere and broadcasting from Germany to Kent.

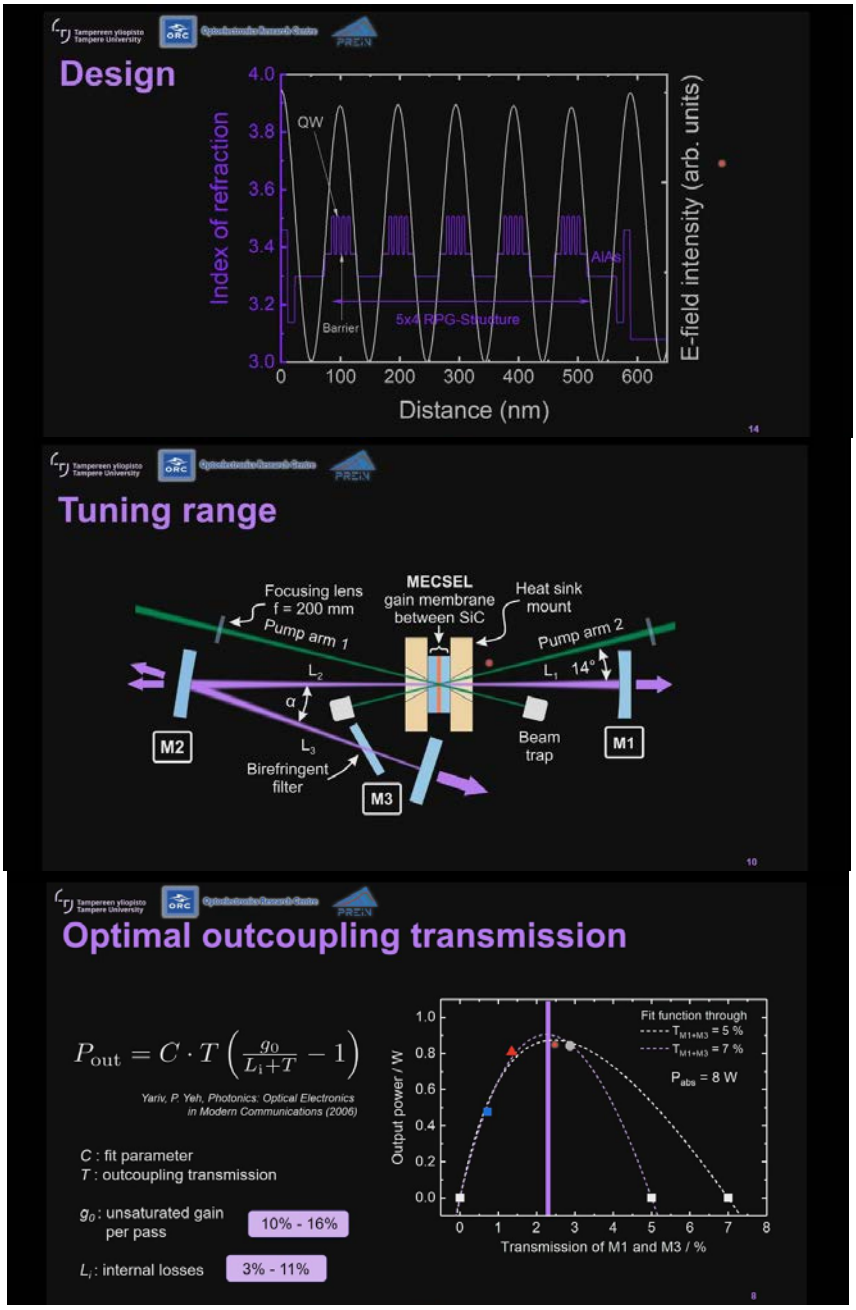
Applied Optics Group Seminars on Friday 15th January 2021

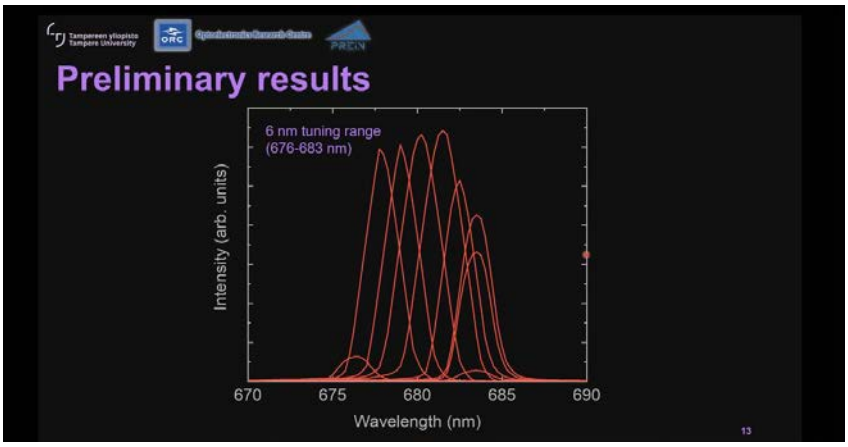
Presentation title: Membrane external-cavity surface-emitting lasers (MECSELs) – an introduction, by Philipp Tatar-Mathes

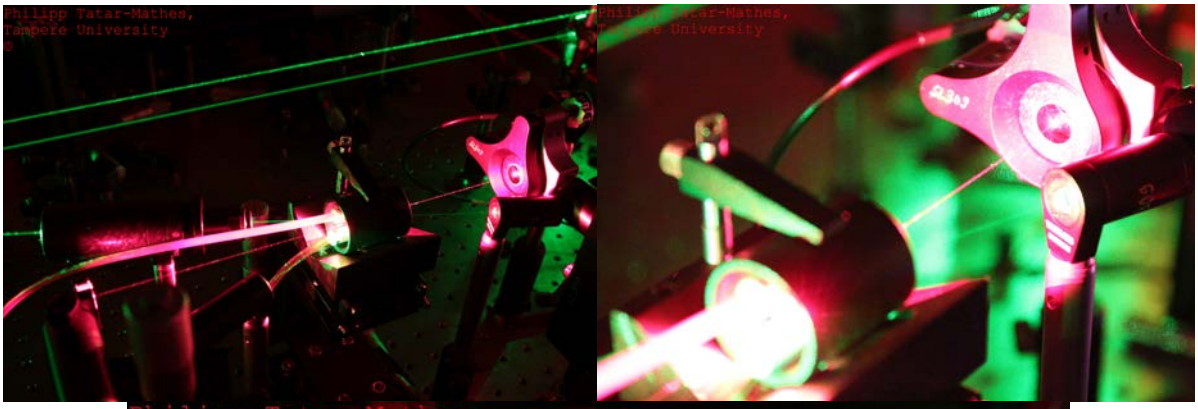
Summary: In order to establish communication between the NETLAS partners, Philipp held a talk about semiconductor laser membranes and their potential applications in OCT systems.

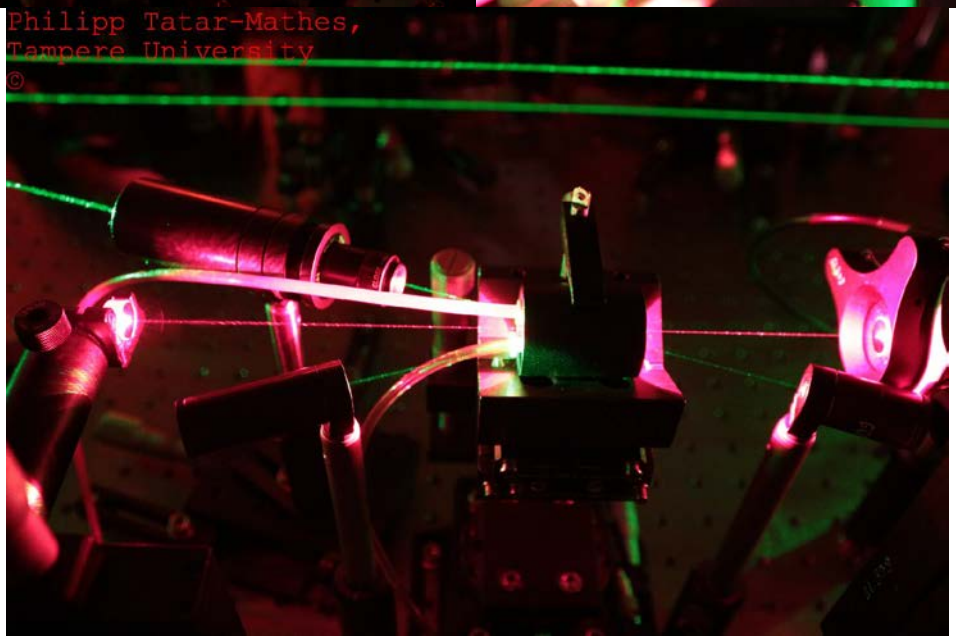
He demonstrated preliminary results and afterwards briefly discussed with the whole team on how such a laser device can be implemented in Kent University, England.

A few screen-prints from the online Teams presentation and photos from Philipp's experimental set-up are displayed below.




Preliminary results
6 nm tuning range
(676-683 nm)
Intensity (arb. units)
670
675
680
685
690
Wavelength (nm)
13


Philipp Tatar-Mathes,
Tampere University
©


Philipp Tatar-Mathes,
Tampere University
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Announcements of interest to the NETLAS Community

We recommend to our NETLAS PhD students to attend these upcoming webinars (part of the free Thorlabs webinar series)

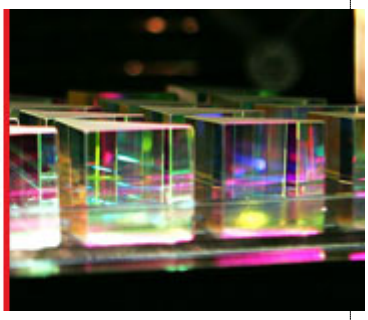
March 24 2021

Up Next! Optics 101: Translating Theory into Practice

Join us for an overview of the key concepts in optics, including the index of refraction, dispersion, Fresnel reflection, interference, and polarization. We'll also discuss the advantages and disadvantages of the various substrates and coatings available. The talk will conclude with a discussion of the most common optical components and limitations in the manufacturing process.

Presented by Bill Donovan, Engineering Manager, Thorlabs Advanced Photonics

Click to Register!



March 31 2021

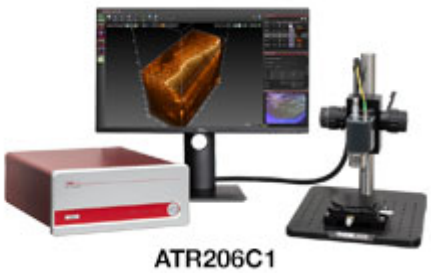
Coming Soon!

OCT Technologies: Swept Source vs. Spectral Domain

In this webinar, Drs. Dierck Hillmann and Sebastian Schäfer of the Thorlabs Optical Coherence Tomography (OCT) Applications Team will review the theory behind Swept Source and Spectral Domain OCT technology. They will highlight the technical differences and present several application examples that show the pros and cons of each technology.

Presented by Dr. Dierck Hillmann, Senior Development Engineer, and Dr. Sebastian Schäfer, Project Manager, Thorlabs OCT Applications Team

Click to Register!



April
7
2021

Coming Soon! Optical Fiber: How It's Made

In this webinar, Dave will walk us through the steps needed to fabricate optical fiber, from the type of glass used (and the properties it needs to have) to the preform preparation and draw processes. This overview will include an in depth look at one of Thorlabs' fiber draw towers and show how a glass preform is fed through it, from being heated to 2000 °C to measuring the outer diameter of the drawn fiber.

Presented by Dave Gardner, Senior Process Engineer, Thorlabs Advanced Photonics

Click to Register!

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