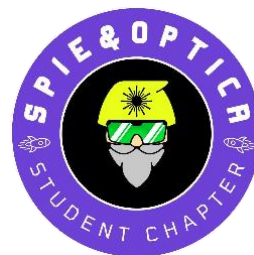




Wrocław University
of Science and Technology



XX-th International Student Conference

OPTO 2025

Wrocław, 7-11 July 2025

Conference Program



**Mode-locked
Technology**

X I L[®]



	Day 1	Day 2	Day 3	Day 4	Day 5
09:00	Monday July 7, 2025	Tuesday July 8, 2025	Wednesday July 9, 2025	Thursday July 10, 2025	Friday July 11, 2025
	9:00 - 10:00 Registration				
10:00	10:00 Conference opening				
	10:15 - 11:15 Invited lecture Anna Musiał	10:15 - 11:15 Invited lecture Manuel F. Ferrer Garcia	10:00 - 11:00 Invited lecture Karen Volke-Sepúlveda	10:00 - 11:00 Invited lecture Clara Saraceno	10:00 - 11:00 Invited lecture Yazhou Wang
11:00	11:15 - 11:45 Coffee break	11:15 - 11:45 Coffee break	11:00 - 11:30 Coffee break	11:00 - 11:30 Coffee break	11:00 - 11:30 Coffee break
			11:30 - 12:00 Session IV: Astronomical Instruments		
12:00	11:45 - 13:00 Session I: Sensing and imaging	11:45 - 13:00 Session II: Pulsed lasers	12:00 - 13:00 Invited lecture Grzegorz Soboní	11:30 - 13:00 Poster session	11:30 - 13:00 Session VI: Materials
13:00					
	13:00 - 14:00 Lunch break	13:00 - 14:00 Lunch break	13:00 - 14:00 Lunch break	13:00 - 14:00 Lunch break	13:00 - 14:00 Lunch break
14:00	14:00 - 16:00 Lab tour	14:00 - 15:00 Invited lecture Šárka Němcová	14:00 - 16:00 Lab tour	14:00 - 15:00 Invited lecture Daniel Urrego	14:00 Conference closing
15:00		15:00 - 16:15 Session III: Optical fibers		15:00 - 15:45 Session V: ML and Adaptive	
16:00					
17:00					
18:00		18:00 - 21:00 City tour		18:30 - 22:30 Conference dinner	
19:00					
21:00					

Monday, 7 July 2025



10:15 – 11:15

Invited Lecture

Dr Anna MUSIAŁ

Department of Experimental Physics, Wrocław University of Science and Technology

Non-classical light sources for quantum cryptography and quantum communication

11:45 – 13:00

Session I: Sensing and imaging

11:45 Maciej BARNA

Real-time clustering of hyperspectral data in multiphoton microscopy

12:00 Mateusz BETKE

Spectral tomography analysis of transverse modes in VCSELs with broken symmetry apertures

12:15 Rafał KOSTUREK

Refractive index sensor utilizing long tapered side-hole optical fiber

12:30 Wiktor KROKOSZ

Terahertz frequency comb mapping with Rydberg atom sensors

12:45 Jakub WRÓŃSKI

Beam displacement detection using spatial mode projection

14:00 – 16:00

Lab tour

A-1, Wybrzeże Stanisława Wyspiańskiego 27, Wrocław

To be announced...

L-1, Na Grobli 15, Wrocław

Optical fibers, fiber characterization, gas sensing, fiber optical amplifiers

Tuesday, 8 July 2025



10:00 – 11:00

Invited Lecture

Manuel F. FERRER GARCIA, PhD

Department of Physics, University of Ottawa

Bragging... a story of diffraction and unitary operations

11:45 – 13:00

Session II: Pulsed lasers

11:45 Adrian CHLEBOWSKI

Interferometric characterization of optical pulses in Fabry-Pérot laser diodes

12:00 Jakub JAWORSKI

Carrier-envelope offset frequency stabilization in a Cr:ZnS mode-locked laser

12:15 Mikołaj KRAKOWSKI

Analysis of input pulse parameters influence on gain managed nonlinear amplification regime

12:30 Aleksander KUBECZEK

Dual beam laser sintering – closed loop PA12 reuse

12:45 Michał PIETRZAK

Methods for generating few-cycle laser pulses in the near- and mid-infrared spectral bands

14:00 – 15:00

Invited Lecture

Šárka NĚMCOVÁ, PhD

Faculty of Mechanical Engineering, Czech Technical University in Prague

Designing a custom ophthalmoscope: from optical simulation to functional prototype

15:00 – 16:15

Session III: Optical fibers

15:00 Rafał CICHOWSKI

Depolarization of Raman solitons in birefringent photonic crystal fibers: mechanisms and modeling

15:15 Szymon MATCZAK

Design and simulation of a side-pump fiber combiner for high-power lasers and amplifiers

15:30 Aleksandra MERCHEL

Controllable optical fibre coupler with liquid crystal cladding

15:45 **Magdalena ZATORSKA**

Doped fiber amplifiers in laser spectroscopy of methane: performance, benefits and effects on signal quality

16:00 **Andrija DJORDJEVIC**

Comparing the optical properties of ZBLAN fibers produced using an experimental compact draw tower and a standard draw tower

Wednesday, 9 July 2025

10:00 – 11:00

Invited Lecture

Karen VOLKE-SEPÚLVEDA, PhD

Institute of Physics, National Autonomous University of Mexico

Structured waves and their interaction with matter

11:30 – 12:00

Session IV: Astronomical Instruments

11:30 **Piotr MARUSZAK**

GROMiT – Galinstan Rotating Mirror Telescope with an Off-Zenith Observation System

11:45 **Paweł RUKAT**

Construction of a laboratory model of an adaptive optics module for an amateur telescope

12:00 – 13:00

Invited Lecture

Dr hab. Grzegorz SOBÓŃ

Department of Field Theory, Electronic Circuits and Optoelectronics, Wrocław University of Science and Technology

Ultrashort laser pulses from a lunchbox - how to make femtosecond laser simple, robust and affordable

14:00 – 16:00

Lab tour

C-4, Janiszewskiego 11, Wrocław

Fiber lasers, terahertz spectroscopy, semiconductor lasers, gas spectroscopy, optical frequency combs

Thursday, 10 July 2025



10:00 – 11:00

Invited Lecture

Prof. Clara SARACENO

Faculty for Electrical Engineering, Ruhr University Bochum

High average power terahertz sources for time domain spectroscopy

11:30 – 13:00

Poster session

Agnieszka BEDNAREK

Hydrostatic pressure and temperature cross-sensitivity in Rayleigh scattering-based distributed fiber measurements

Piotr BIAŁUCHA

The effect of cleaning on the transmission properties of blue-control lenses

Uliana FINAEVA

Simple and effective tissue attenuation measurement

Patrycja GRONOWICZ

Micro modifications of hollow-core fibers using femtosecond laser pulses and focused ion beam

Adrian KAIM

Not only plasmonics: how metal nanoparticles influence the performance of ferro-pyro-phototronic detectors

Aleksandra K. KORZENIEWSKA

Optical vortex trajectories as indicators of wavefront aberrations

Magdalena ŁUKOWICZ

Wavefront sensing with optical vortices leads to improved shot noise resistance

Karolina NIETUBYĆ

Investigation of light illumination effects on electrical properties of WSe₂ and MoS₂ – analysis of current-voltage characteristics

Przemysław NOWAKOWSKI

3D-print nanowaste: multiscale investigation of nano-/microplastic formation, composition, and toxicity in polymer-based additive manufacturing

Piotr PEREHINIEC

Development of a mirror inside anti-resonant hollow core fiber

Antoni SKOCZYPIEC

Design of fiber-based dispersive elements for quantum information science

Seyedeh Arasteh JAHANI

Photoresponse properties of various azo-dyes dispersed in different polymer matrices

14:00 – 15:00

Invited Lecture

Daniel URREGO, PhD

ICFO – The Institute of Photonic Sciences, Barcelona

Demonstration of experimental schemes for imaging and sensing: from quantum to classical and back

15:00 – 15:45

Session V: Machine learning & adaptive

15:00 **Przemysław CHMIELOWSKI**

Laser-base gas sensing – using neural networks to speed-up and simplify data analysis

15:15 **Tomasz JANKOWSKI**

Adaptive spiral phase plates for generation of optical vortices

15:30 **Alicja KWAŚNY**

Optimization of femtosecond fiber laser pulses with selected metaheuristic algorithms

Friday, 11 July 2025



10:00 – 11:00

Invited Lecture

Yazhou WANG, PhD

DTU Electro, Technical University of Denmark

Synthesis of mid-infrared fiber laser spectral lines for multi-gas detection

11:30 – 13:00

Session VI: Materials

11:30 Uliana FINAEVA

Temperature effect on cracking behavior of flat glass under local heating

11:45 Rafat KOMAR

Enhanced probing of coherent magnons with spectroscopy on higher-energy excitonic states in A-type antiferromagnet CrSBr

12:00 Monika SALAMAGA

Verification of twisted nematic liquid crystals utility in system to measure the birefringent media

12:15 Piotr SIERADZKI

Characterization of a spatially homogeneous polariton condensate in a high-Q GaAs/AlGaAs microcavity

12:30 Zuzanna ŚNIOCH

Role of chlorine substitution in tailoring the optical and magnetic properties of CrSBr