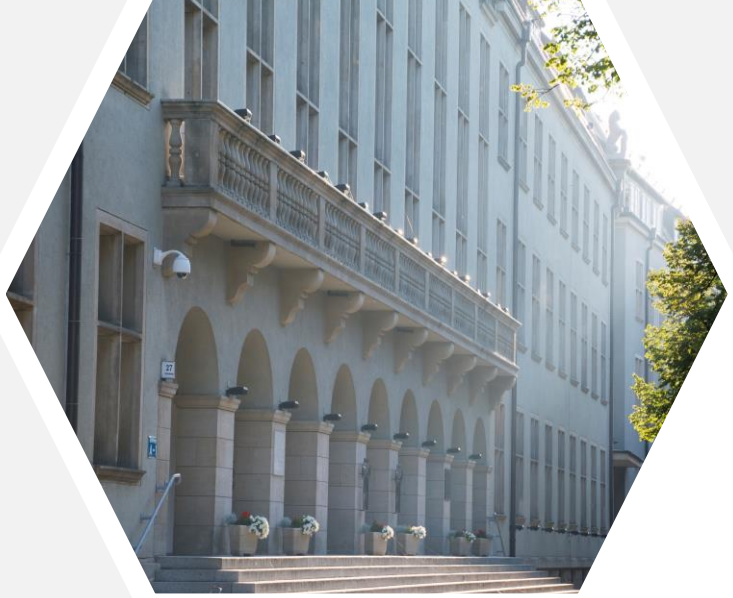
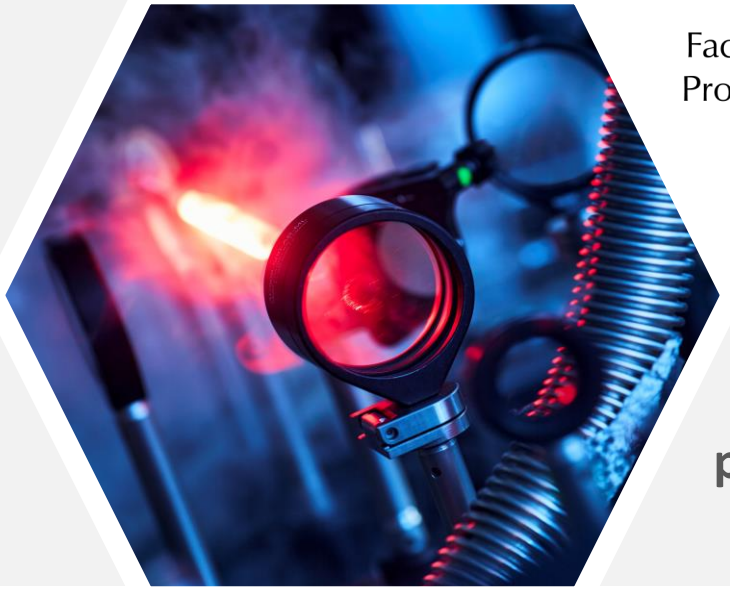
Faculty of Fundamental Problems of Technology





Faculty of Fundamental Problems of Technology

pwr.edu.pl/en

Wrocław University of Science and Technology

HR EXCELLENCE IN RESEARCH

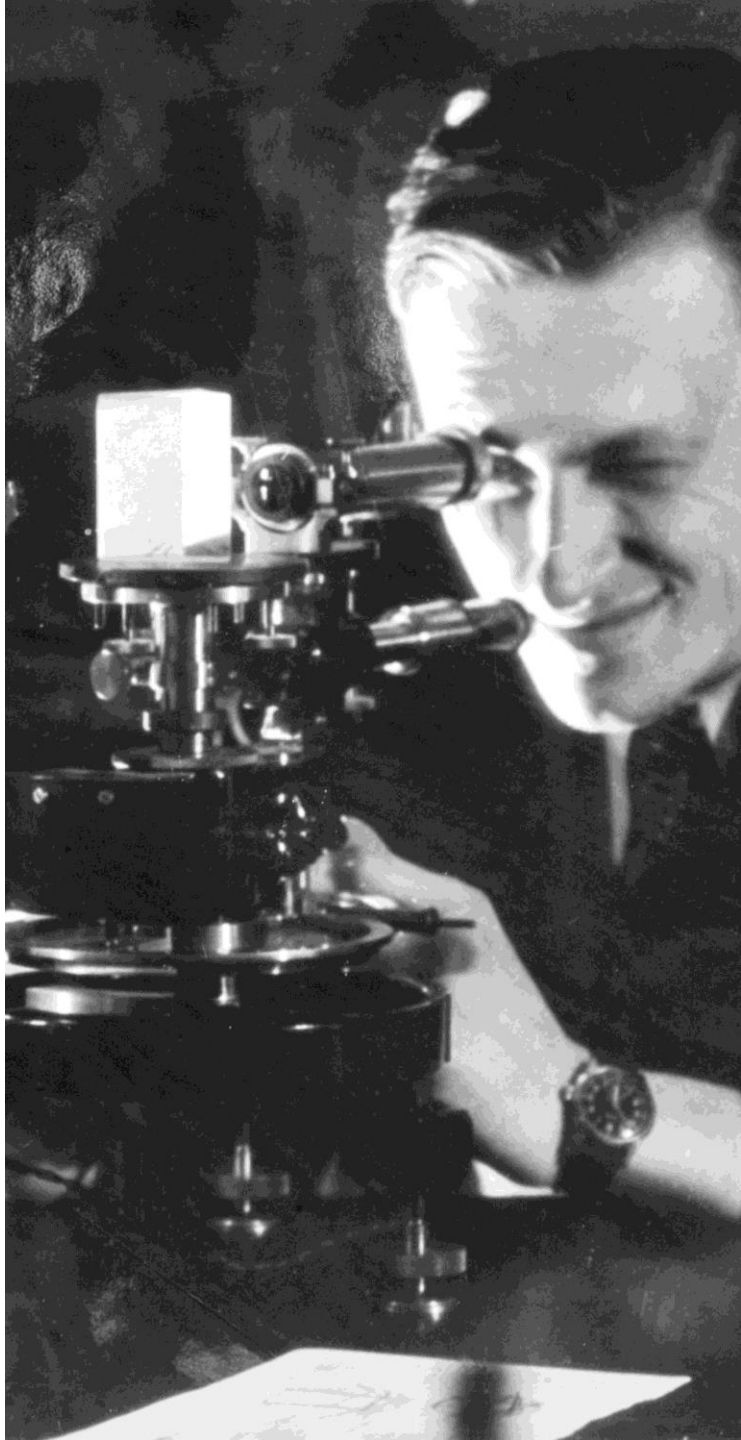
unite! University Network for Innovation, Technology and Engineering

Wrocław University of Science and Technology

History of the Faculty

In 1960s, the Study of Theoretical Technology at the Faculty of Construction was transformed into the Study of Fundamental Problems of Technology. It offered interdisciplinary education in technical fields, integrating technical studies with basic sciences like mathematics. Thanks to Professors Tadeusz Porębski and Wacław Kasprzak, the Faculty of Fundamental Problems of Technology was established in 1968 at Wrocław Tech. Initially, WPPT educated students in Applied Physics and Applied Mathematics, which were later renamed Physics and Mathematics. Over the years, the faculty expanded its offerings, including Biomedical Engineering in 1980, Technical Physics in 1997, and Photonics and Computer Science programs in the early 2000s. In 2003, it launched doctoral studies in Physics and Mathematics and introduced Nanoengineering in 2004.

In 2014, faculty restructuring led to the creation of departments in Mathematics, Computer Science, and various physics disciplines. Today, WPPT comprises departments in Experimental Physics, Optics and Photonics, Semiconductor Materials, Biomedical Engineering, and the Institute of Theoretical Physics.

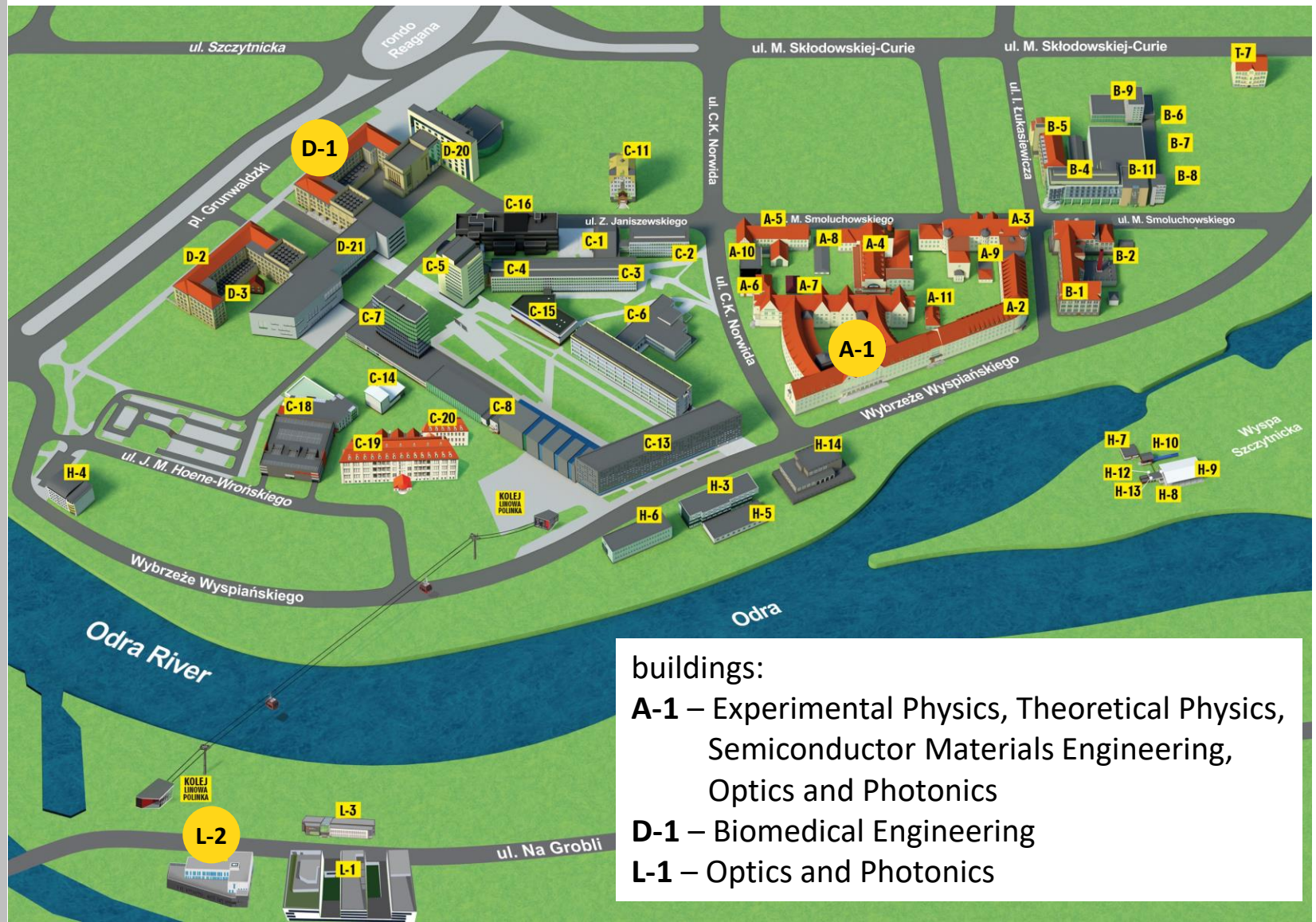


Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Faculty on the Campus

Wyb. Wyspiańskiego 27, 50-370 Wrocław,



buildings:

A-1 – Experimental Physics, Theoretical Physics, Semiconductor Materials Engineering, Optics and Photonics

D-1 – Biomedical Engineering

L-1 – Optics and Photonics

Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Faculty Leadership

Dean

Prof. Paweł Machnikowski, DSc, PhD, Eng.

Vice-Dean for Didactics Organization

Monika Borwińska, PhD, Eng.

Vice-Dean for Education

Elżbieta Szul-Pietrzak, PhD, Eng

Vice-Dean for General and Financial Affairs

Adam Sieradzki, DSc, PhD, Eng.

Assoc. Professor

Vice-Dean for Student Affairs

Małgorzata Kostyszak, PhD, Eng.

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Figures

886

1st degree students
(full-time + part-time)

127

2nd master's degree
(PL+ENG)

290

Graduates

75

PhD students

7

Industrial doctorates

4

Departments

1

institute

180

Academic staff

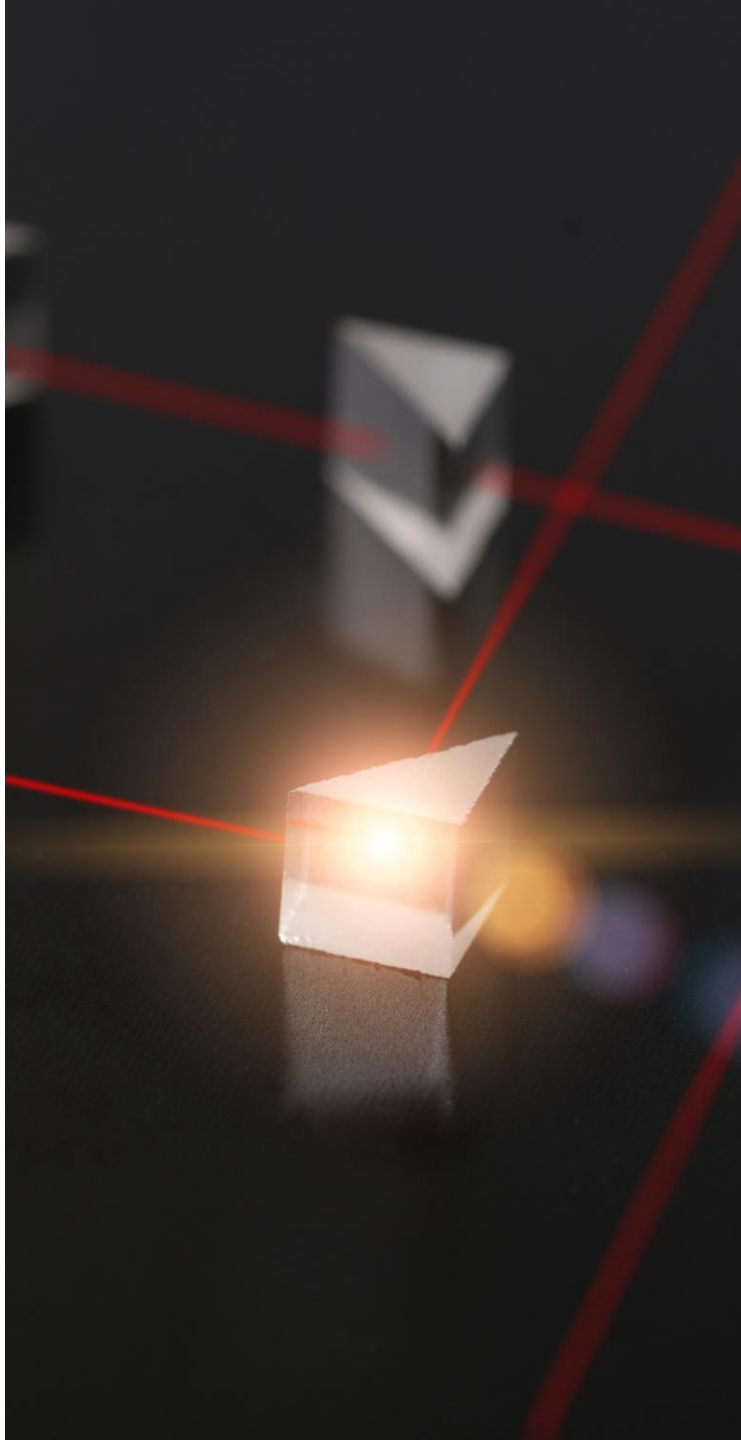
Faculty of Fundamental Problems of Technology

figures as of **31 December 2023**

Wroclaw University of Science and Technology

Mission

- To advance scientific research and education at the highest international standards, focusing on physical sciences, biomedical engineering, and materials engineering.
- To equip students with comprehensive technical knowledge and an understanding of technological culture.
- To empower students to contribute effectively to the technological and economic progress of our nation.
- To foster a collaborative environment that promotes excellence in scientific inquiry and professional practice.



Faculty of Fundamental Problems of Technology

Academic rankings

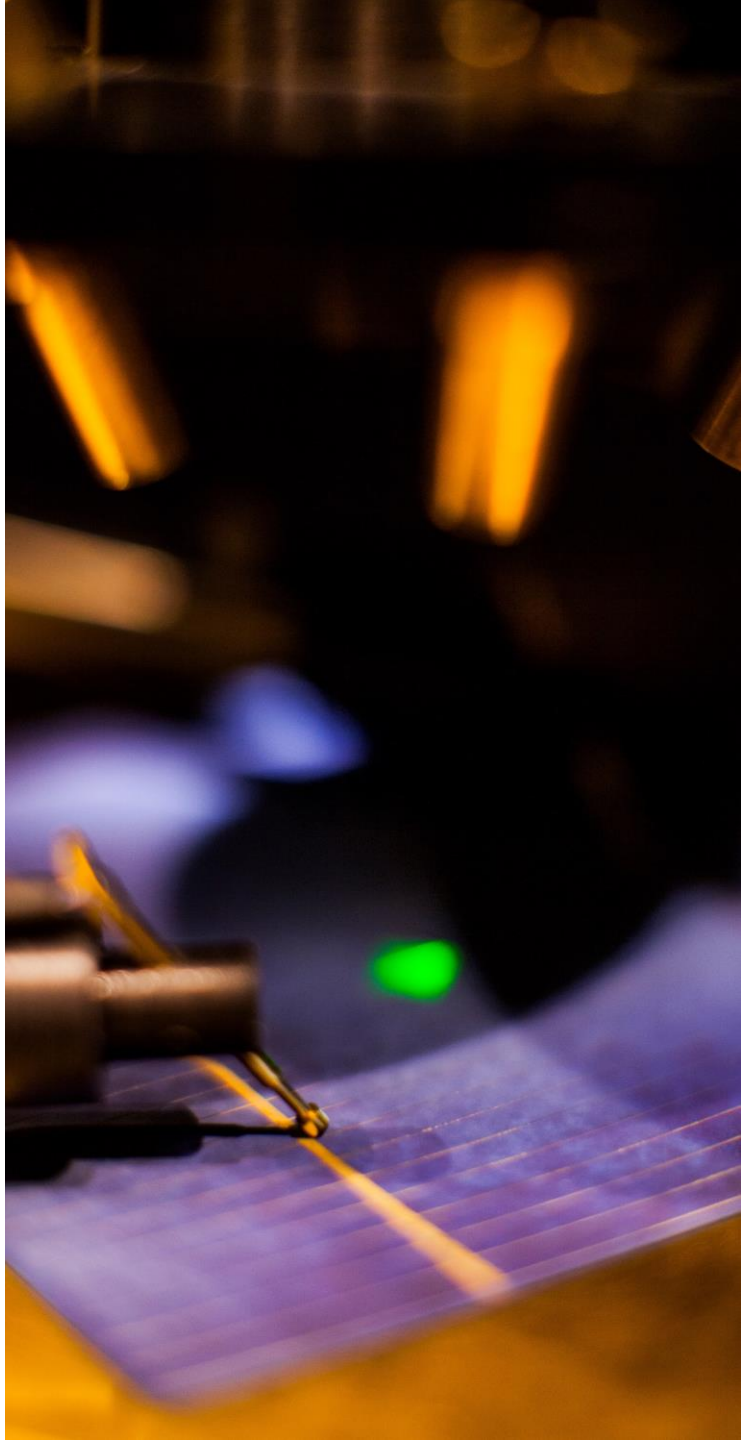
Physics & Astronomy 401-450

Biomedical Engineering 5th place
Technical physics 3rd place

Wroclaw University of Science and Technology

Strategy

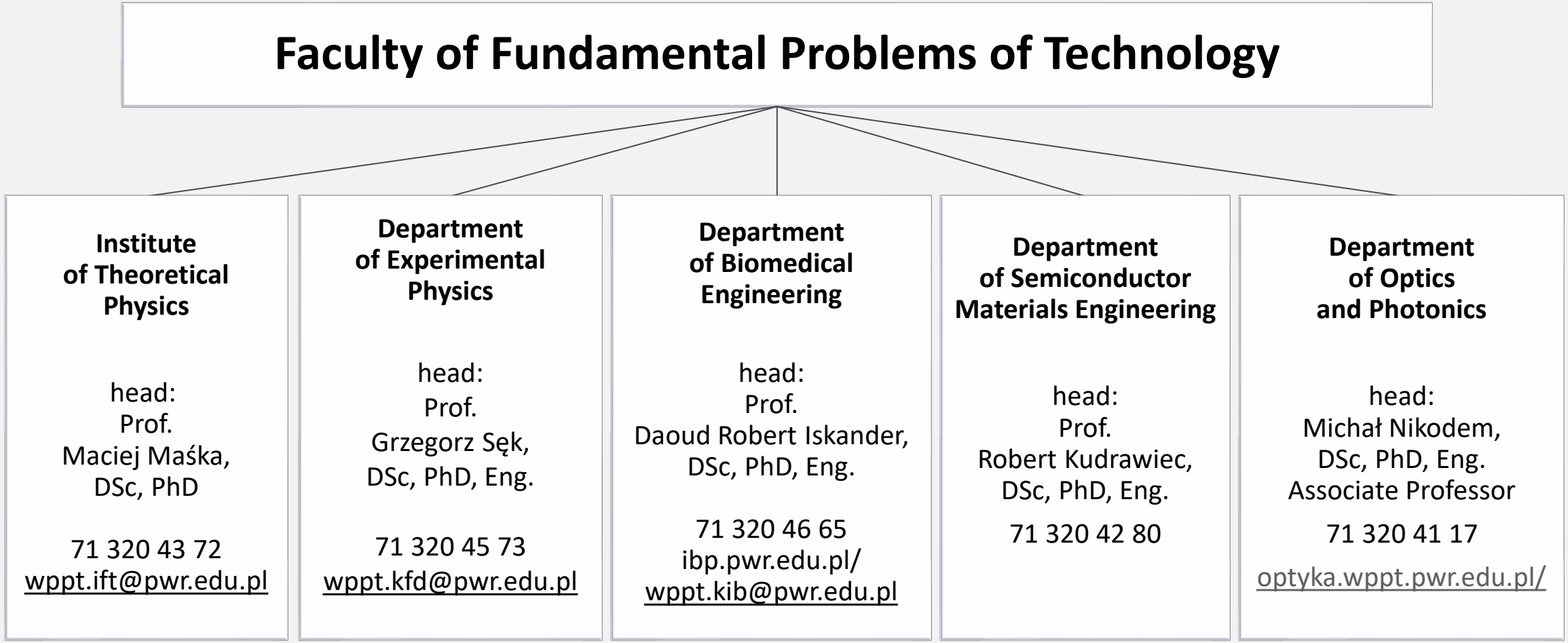
- Develop and implement innovative curricula that reflect current advancements in science and technology.
- Facilitate student engagement in cutting-edge research projects to enhance their practical skills and theoretical understanding.
- Provide training and education in modern diagnostic techniques, measurement methods, algorithms, and advanced software solutions.
- Cultivate partnerships with leading research and academic institutions to enhance collaborative research and educational opportunities.
- Create a supportive environment that encourages students to achieve excellence in both academic and professional settings.



Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Faculty Structure



Wroclaw University of Science and Technology

Accomplishments

- Łukasz Dusanowski, PhD former Faculty student of Technical Physics, PhD also at Wroclaw Tech currently opening his own laboratory at Florida State University USA.
- A team of scientists working at the Faculty of Fundamental Problems of Technology, led by Maciej Pieczarka, PhD, DSc, offered a completely new perspective on the principles of semiconductor lasers. The results of their discovery, which is highly important from the laser physics viewpoint, have been published in the journal “Nature Photonics”.
- Dr Mateusz Dyksik, former Faculty student of Technical Physics, PhD at Wroclaw Tech where he works now honored in 2022 for his achievements by the prize of European Magnetic Field Laboratory.

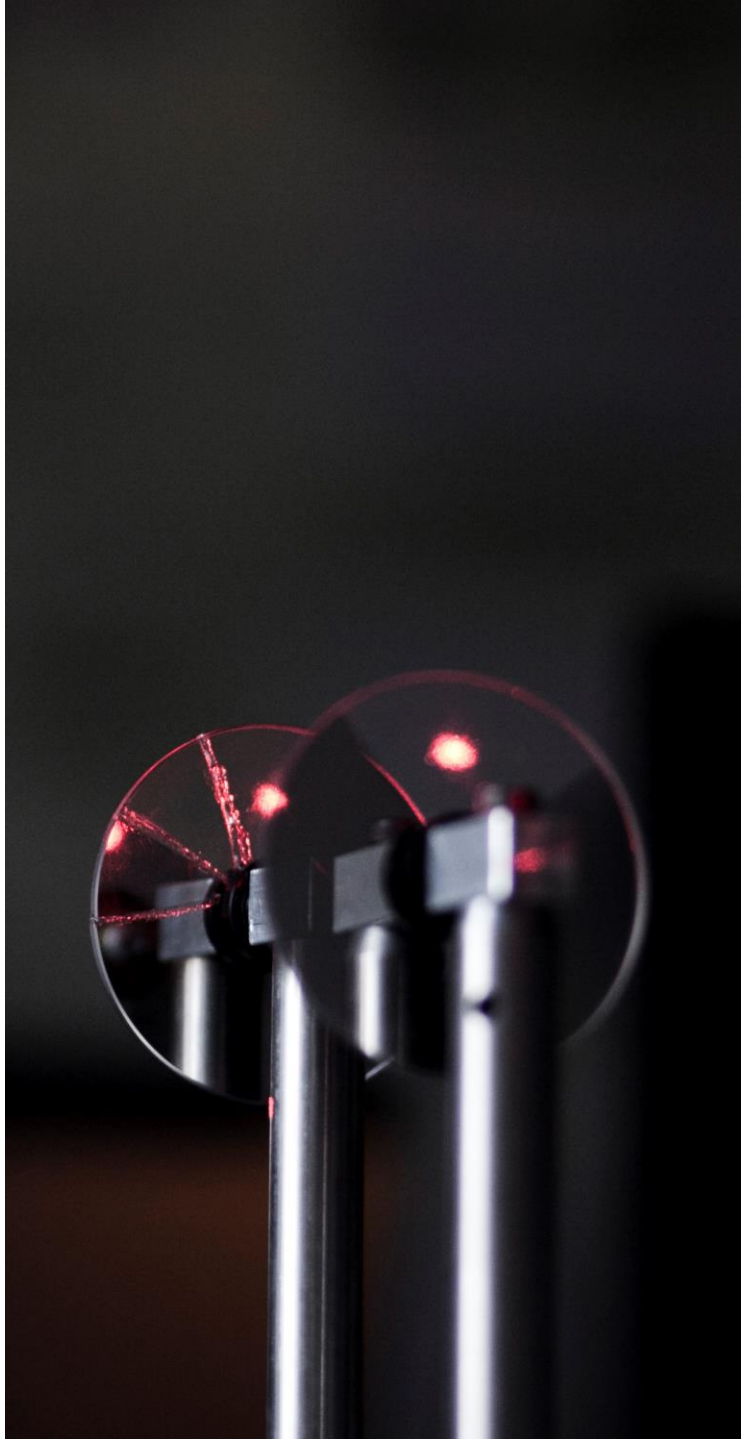
EMFL
European Magnetic Field Laboratory

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Priority Research Areas

- (2) Innovative Materials and Advanced Manufacturing
- (5) Health and Medical Technologies
- (7) Basic Research for Technology and Innovation



Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

World's TOP 2% Scientists (2023)

Prof. Daoud Robert Iskander
DSc, PhD, Eng.

Prof. Robert Kudrawiec
DSc, PhD, Eng.

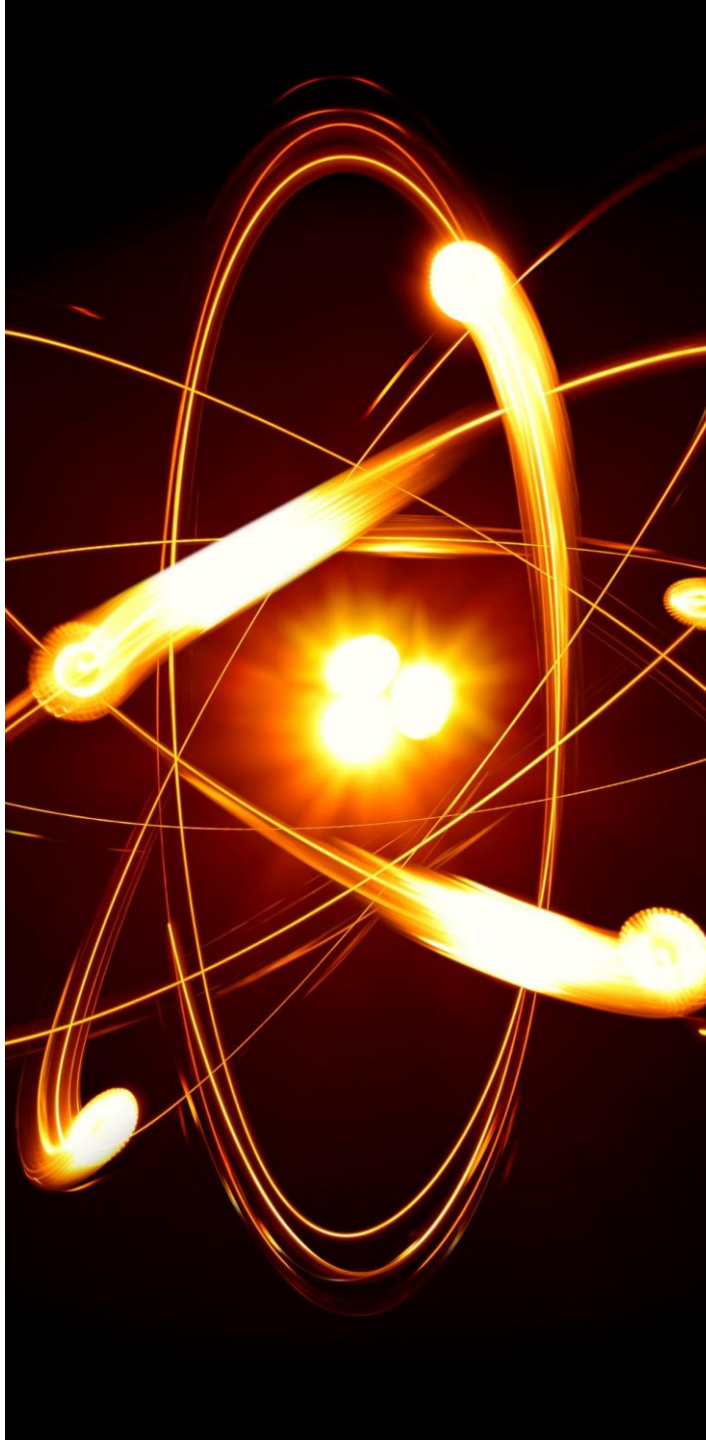
Michał Nikodem
DSc, PhD, Eng.

Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

World Top 2% Career

- prof. D. Robert Iskander
- prof. Robert Kudrawiec
- prof. Arkadiusz Wójs
- dr Krzysztof Gałkowski
- prof. Jan Misiewicz
- prof. Wacław Urbańczyk
- prof. Jan Masajada
- prof. Henryk Kasprzak



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Biomedical Engineering

- Neuroengineering Laboratory
- Biomedical Signal Processing Group (BSPG)
- Macromolecular Aggregate Biophysics Group
- MED(PHI) Laboratory
- MOlecular Biophysics and Bioinformatics Group
- Multiscale Bioimaging Research Group

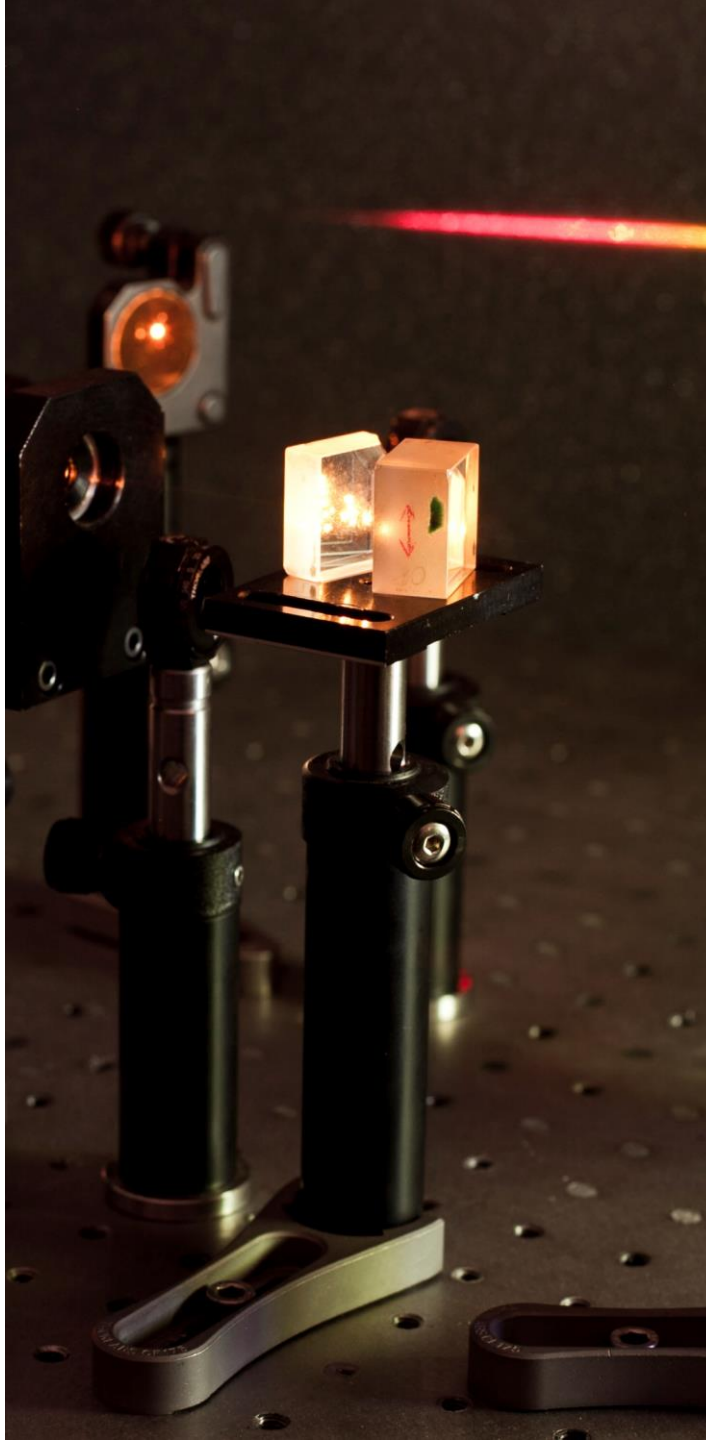
Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Biomedical Engineering

Most Important Equipment:

- Transcranial Doppler ultrasonography system (Doppler-BoxX, DWL)
- Photoplethysmograph (Finometer Midi, FMS) for noninvasive blood pressure monitoring
- Holter ECG system (HolCARD Alfa, ASPEL)
- Near-infrared tissue oximeter (ForeSight, Casmed)
- Functional near-infrared spectroscopy system (fNIRS, NIRx Medical Technologies)
- Biometer IOLMaster 700
- OCT Revo 80
- Malvern Zetasizer Nano ZS
- Spectrophotometer Thermo Scientific Nicolet Evolution 100 UV-VIS
- Atomic force microscopy



Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Department of Biomedical Engineering

Research Focus Areas:

- Monitoring and analysis of biomedical signals related to: -
  - Blood flow in the brain
  - Blood pressure in the brain
  - Volume-pressure relationships in the intracranial space
- Physiological optics
- Eye imaging studies
- Investigation of eye biomechanics
- Development of optometry and ophthalmic instrumentation
- Creation of algorithms for supporting the diagnosis of eye diseases
- Design, optimization, and analysis of liposomal drug aggregation properties within the Wrocław Network of Biotechnology Laboratories of Lipid Aggregates
- **Search for new drugs targeting major 21st-century diseases:**
  - Investigation of molecular mechanisms involving cell membranes and transporters
  - Development of dedicated inhibitors of glucose transporters for anti-cancer therapies (since 2014)
  - Exploration of detergents that selectively dissolve bacterial cell membranes (since 2016)

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Research focus areas

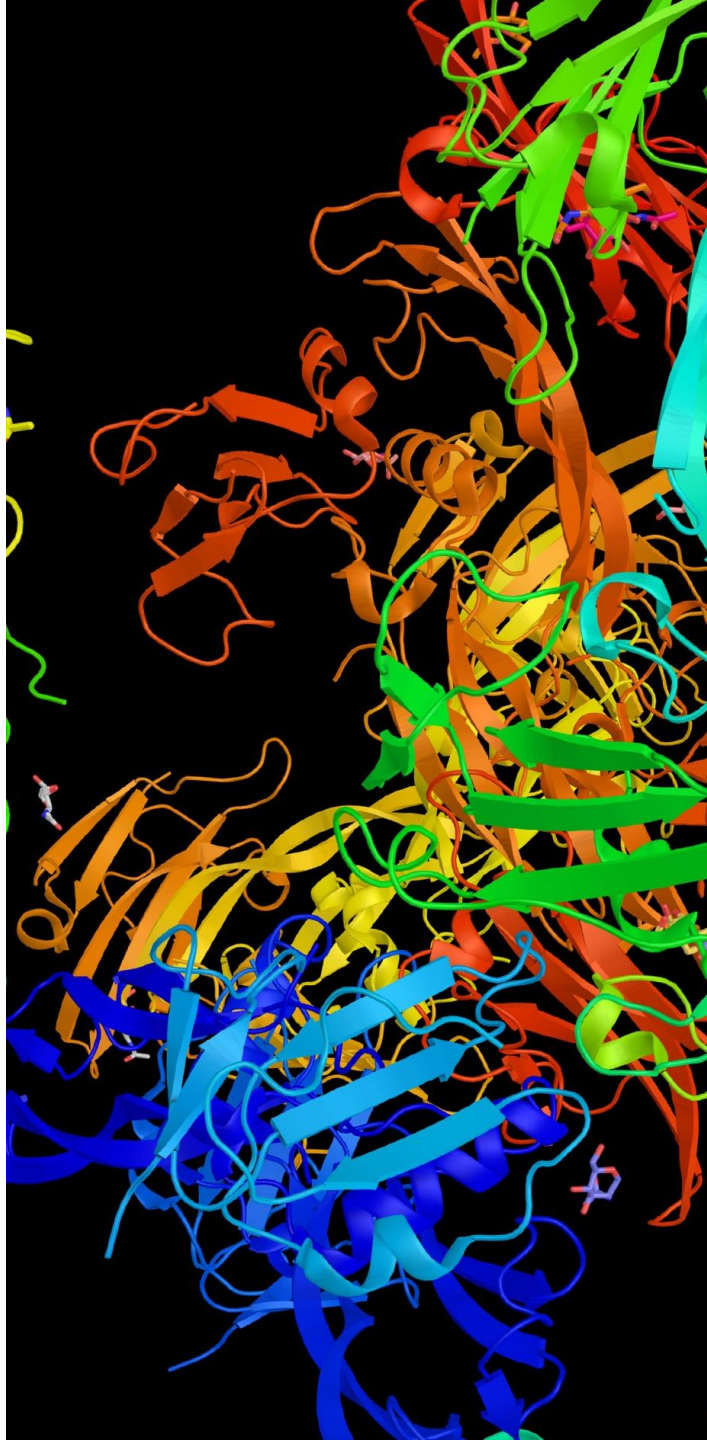
Study of membrane proteins and lipid membrane mechanics in Biomedical Engineering

Research activities on:

- Bioinformatic modeling of protein structures
- Modeling contacts between amino acids
- Recognition of motifs in proteins
- Protein amyloidity prediction
- Electroporation and electrochemotherapy of cancer cells

Focus on:

- Nanoliposomal formulations
- Biofunctionalization of cardiovascular stent surfaces
- Biomechanical characterization of cells and cellular structures
- DNA-drug interactions
- Endovascular illumination systems

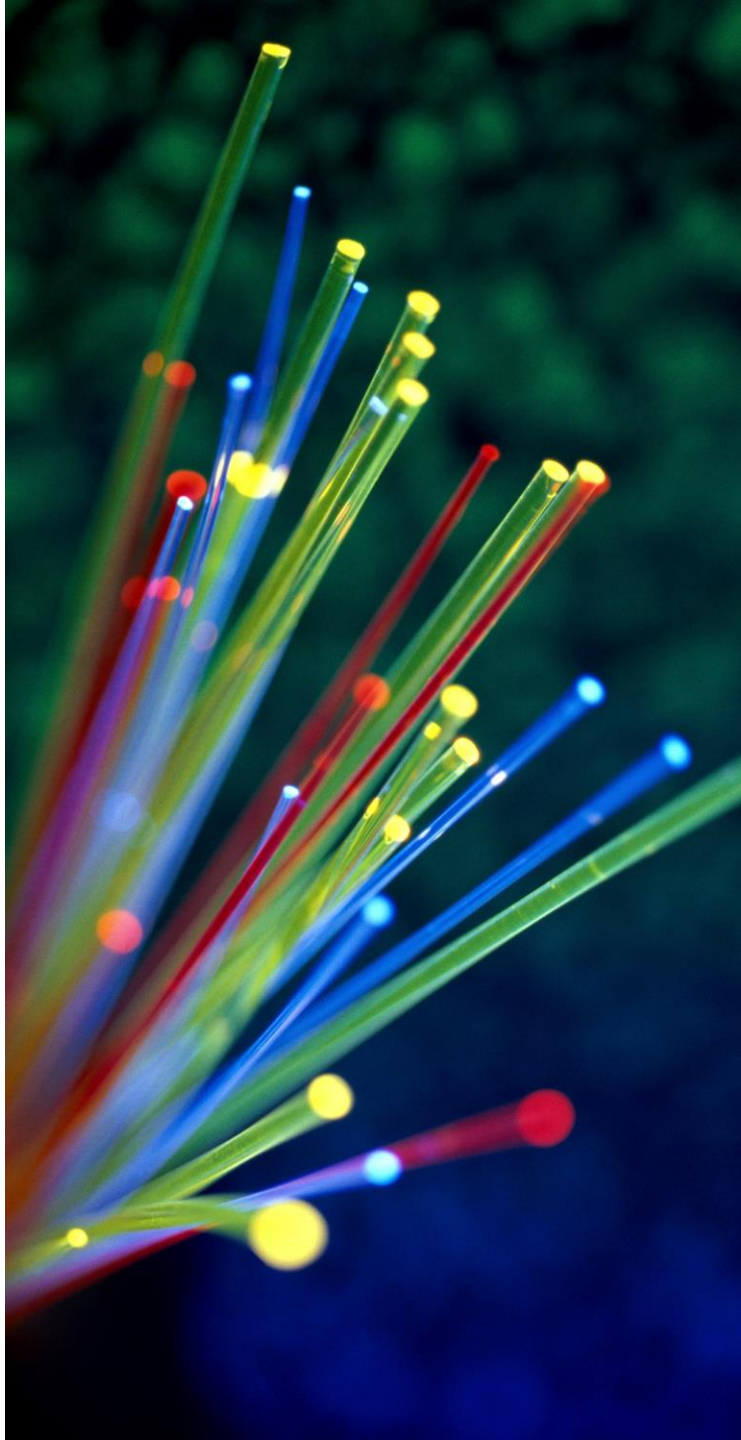


Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Optics and Photonics

- Fiber-Optics Laboratories
- Optical Tweezers Laboratory
- Photometric Measurements Laboratory
- Laboratory of Interferometric and Polarization Measurements



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Optics and Photonics

Most Important Equipment:

- Supercontinuum sources (from VIS to mid-IR)
- Spectrum analyzers (from VIS to mid-IR)
- Advanced glass processing instruments (Vytran; Fujikura LZM)
- Inverted biological microscopes
- Fast cameras (up to 10 kHz sampling frequency)
- Highly sensitive cameras for fluorescence microscopy
- High energy IR trapping lasers
- UV-VIS-NIR array spectroradiometer
- Software for designing and analyzing optical and illumination systems
- Home-made system for fiber Bragg grating manufacturing based on femtosecond laser

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Optics and Photonics

Research Focus Areas:

Design of New Optical Fibers:

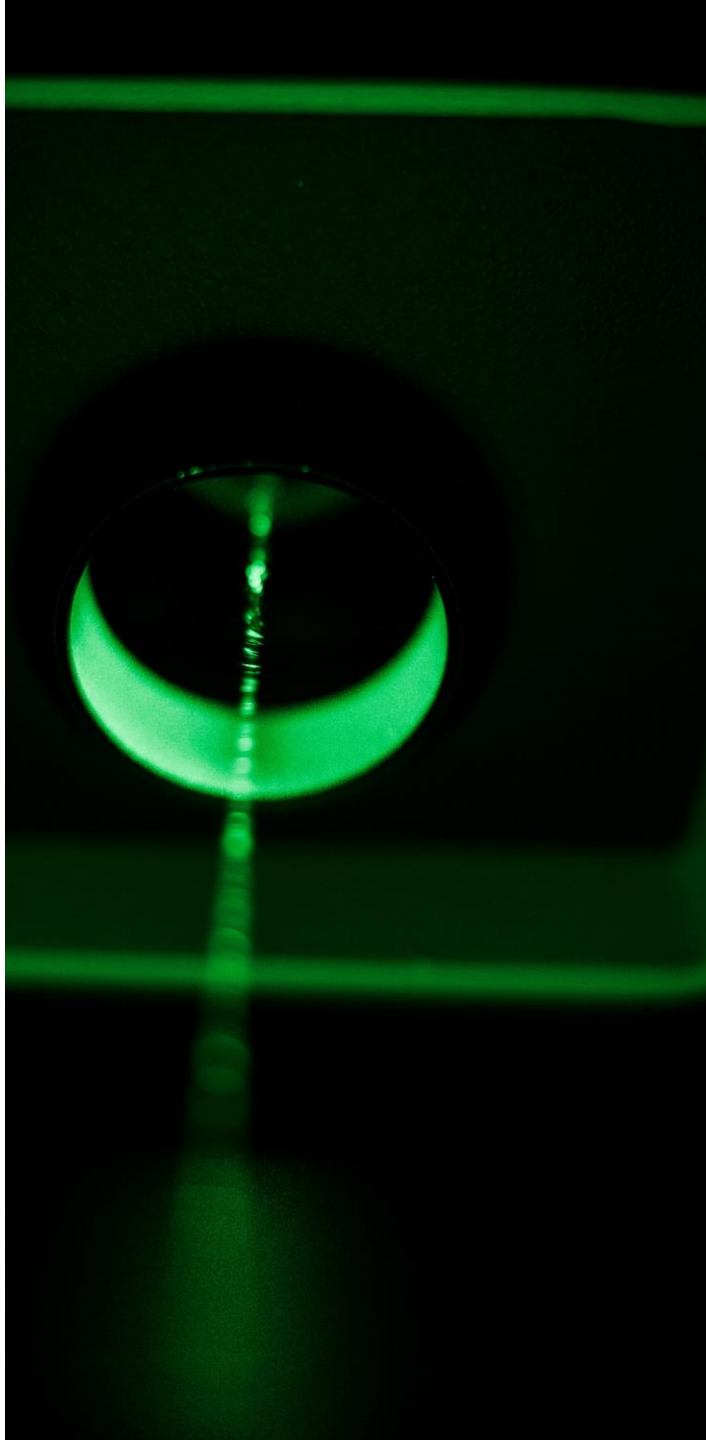
- Enhanced performance for sensing applications:
  - Pressure sensing
  - Temperature sensing
  - Strain sensing
- Development of optical fibers for nonlinear light conversion
- Characterization of non-standard optical fibers

Optical Tweezers Technique:

- Measurement of biological objects in collaboration with biomedical groups

Application of Nanocrystals:

- In medical science
- In material science



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Optics and Photonics

Research Focus Areas:

Optical Tweezers Technique:

- Measurement of biological objects in collaboration with biomedical groups

Application of Nanocrystals:

- In medical science
- In material science

Faculty of Fundamental Problems of Technology

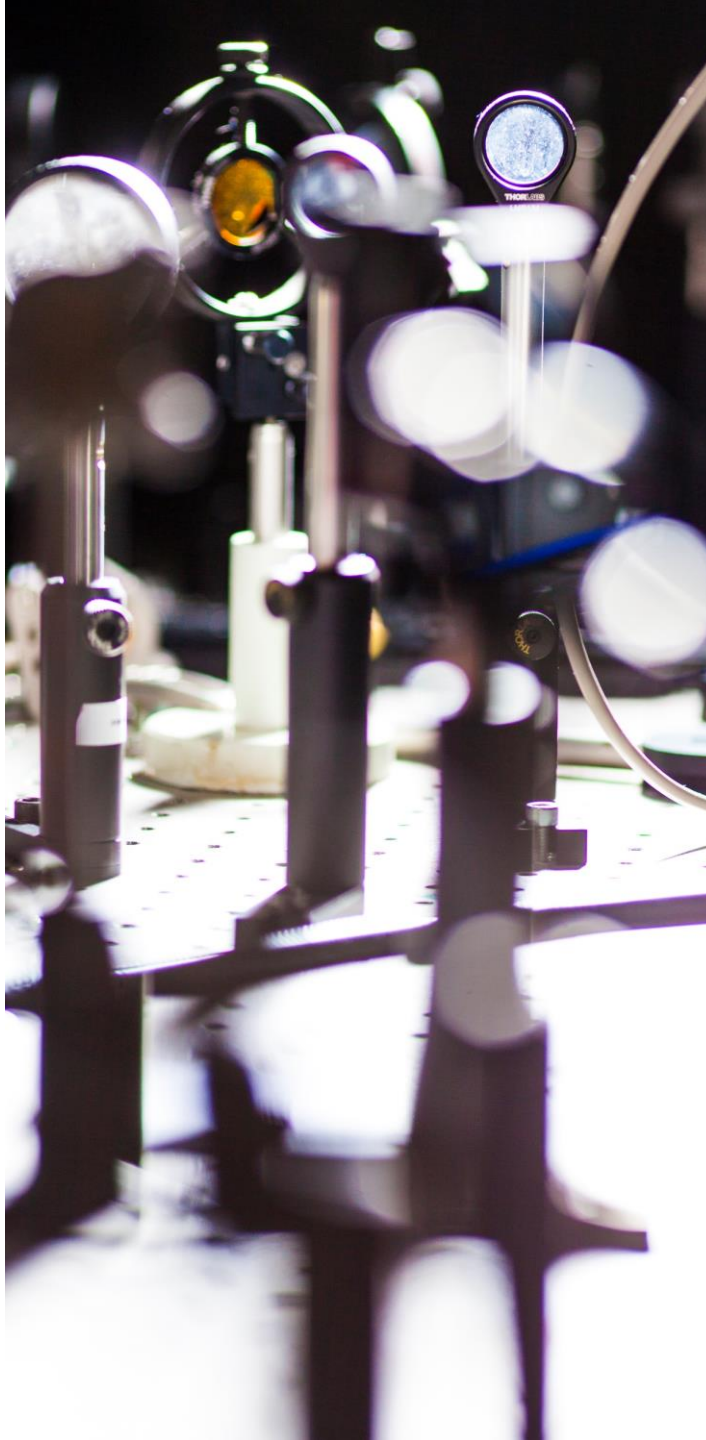
Wroclaw University of Science and Technology

Department of Optics and Photonics

Research Focus Areas:

Photometric Measurements:

- Measurement of basic operational parameters of light sources and luminaires
- Utilization of a 15-meter-long photometric darkroom maintained at ~23°C
- Design of optical and mechanical systems for lamps
- Testing and evaluation of provided designs
- Consulting services in lighting technology, especially LED technology



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Optics and Photonics

Research Focus Areas:

Optical Vortex Research:

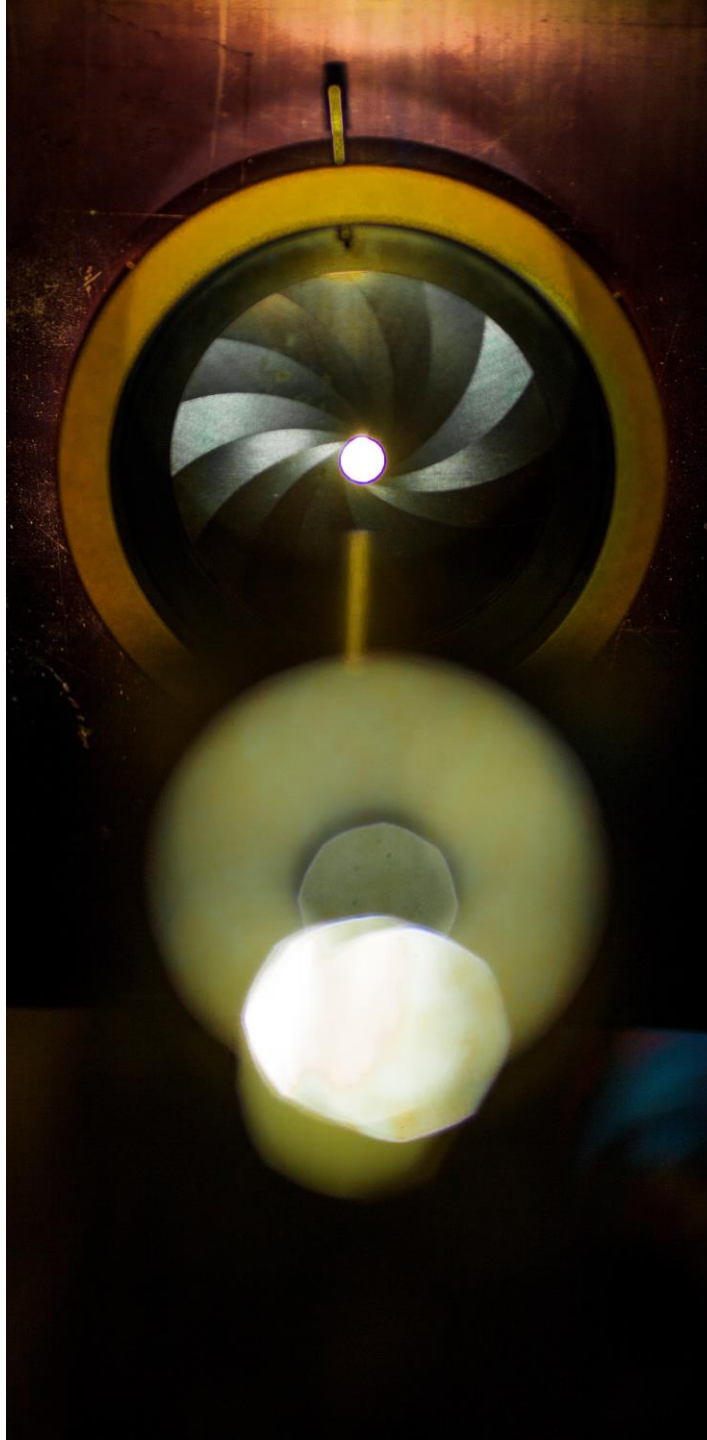
- Optical vortex interferometry
- Optical vortex imaging in microscopy
- Optical vortex wavefront sensing

Laser Beam Positioning:

- Development of novel methods for laser beam positioning

Telecommunications Research:

- Expansion towards telecommunications based on optical vortices for the computational industry

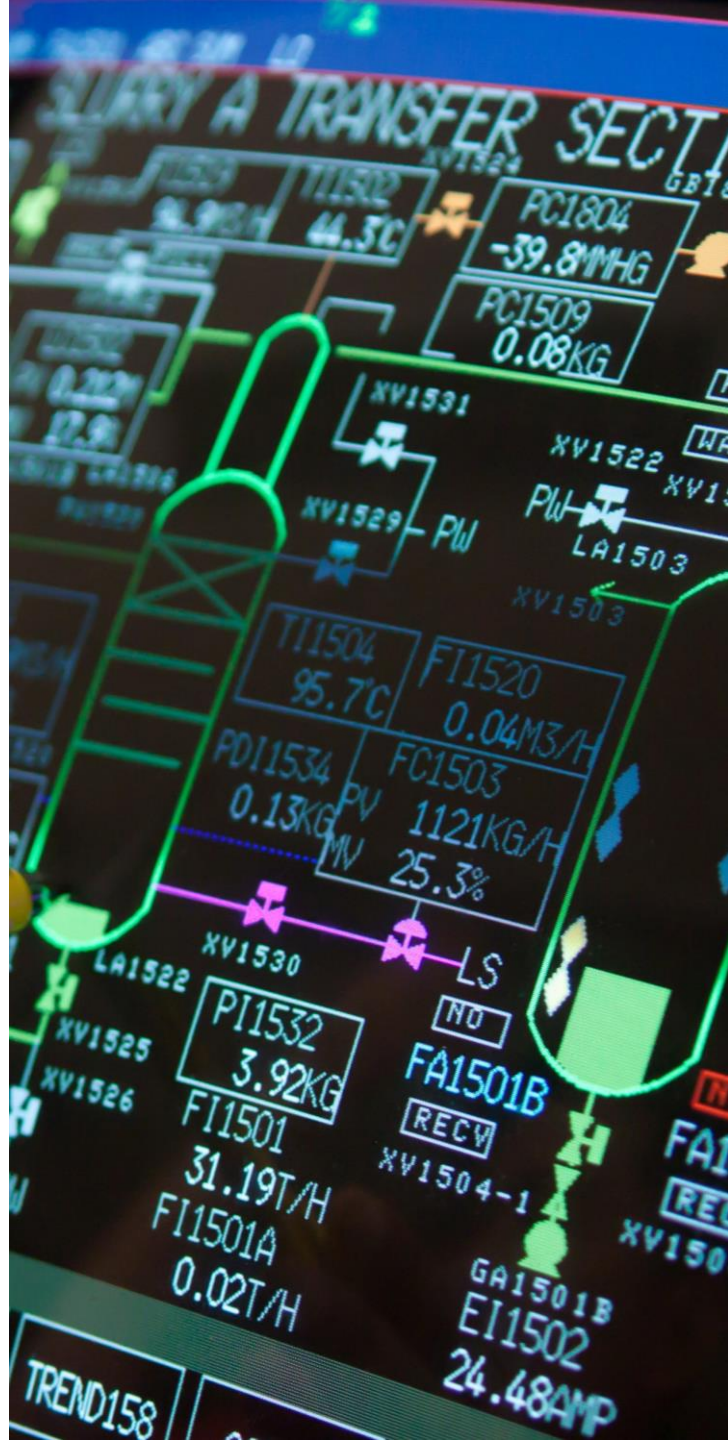


Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Department of Semiconductor Materials Engineering

- X-ray Diffraction Laboratory
- Laboratory for Characterisation of Semiconductor Materials under High Hydrostatic Pressure
- Laboratory of Electrical Characterization of Semiconductor Materials
- Laboratory of Optical Characterization of Semiconductor Materials
- Laboratory of Optical Modulation Spectroscopy
- Laboratory of Time-Resolved Microwave Photoconductivity
- Laboratory for Electrical Properties of Semiconductors (LEPS)



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Semiconductor Materials Engineering

Most Important Equipment:

Spectroscopy Equipment:

- Marvel Panalytical Empyrean X-ray Diffractometer
- High resolution spectrometers
- Photoacoustic Spectroscopy System
- Setup for Photoluminescence Measurements
- PVE300 Quantum Efficiency System (Bentham)

Cryogenic Equipment:

- Closed-Cycle Helium Cryostats
- Liquid Nitrogen Cryostats
- Temperature Controlled Probe System

Pressure and Measurement Systems:

- Diacell® OmniDAC-LT Diamond Anvil Cells
- Piston-Cylinder Pressure Cells
- Capacitance Meter
- Precision Impedance Analyzer

Laser Equipment:

- Pulsed Lasers

Characterization Systems:

- Deep Level Transient Spectroscopy System (DLTS)
- I-V Curve Tracer with Solar Simulator
- Kelvin Probe SKP5050 System
- Admittance Spectroscopy Technique Setup
- System for Photodetectors Characterization

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Semiconductor Materials Engineering

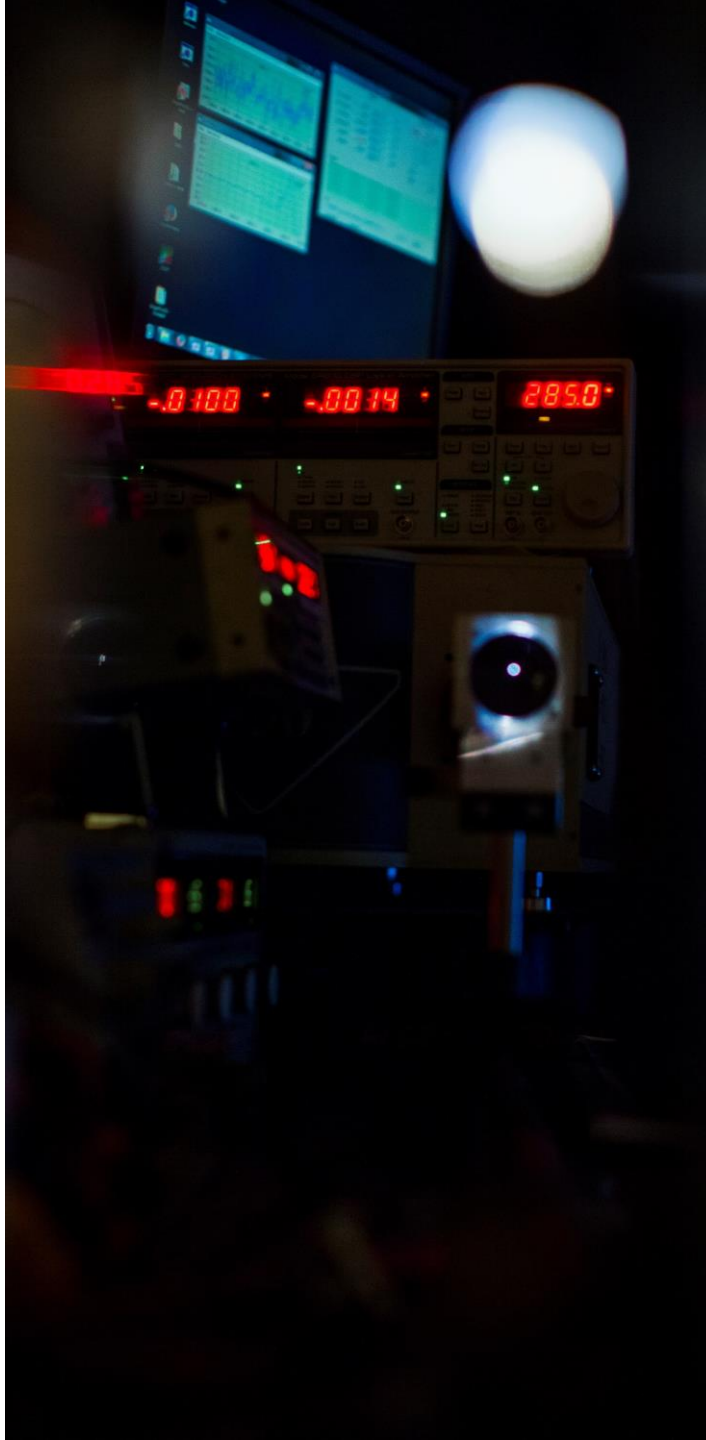
Research Areas and Focus:

Optoelectronics:

- Development of pyrophototronic detectors based on pyroelectric, photovoltaic, ferroelectric, and plasmonic phenomena.
- Research on nanowires and quantum wells using Zn(Cd,Mg)O and AlGaN/GaN compounds for light emitter applications (e.g., laser diodes).
- Exploration of GaN-based nanowires, including metallic layers to enhance photon absorption in light emitters.

Electronics:

- Characterization of defects in semiconductor materials used in electronics, such as silicon, gallium arsenide, gallium nitride, and zinc oxide.



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Semiconductor Materials Engineering

Research Areas and Focus:

Photovoltaics:

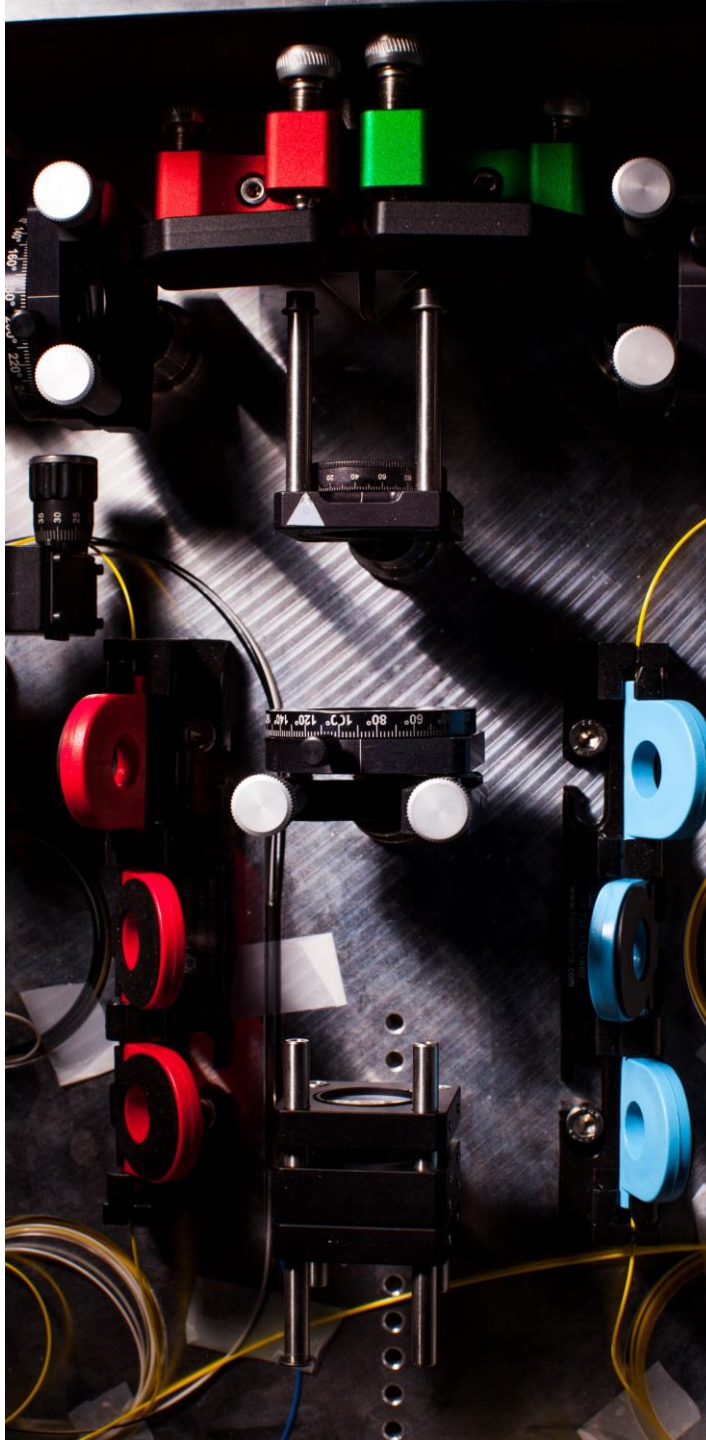
- Characterization of new materials for inorganic and perovskite photovoltaic cells.

Optical Spectroscopy Techniques:

- Photoluminescence, reflectance, and absorption measurements across a broad temperature range and spectral range from mid-infrared to UV.
- High hydrostatic pressure optical spectroscopy (Photoluminescence, Raman, absorption, and transmission).
- Development of optical modulation spectroscopy for various materials.

Charge Carrier Dynamics:

- Investigation of charge carrier dynamics in semiconductor materials.



Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Laboratories of the Department of Experimental Physics

Most Important Equipment:

- FTIR-based Setup (Bruker 80v)
- System of MIR Pulsed Lasers and Fast Detectors (for time-resolved measurements from 2 to above 10 µm)
- Pulsed Laser Systems (including harmonics and OPO, 0.2 to 3 µm range)
- Magneto-Optics Setups
- MicroRaman Spectrometer
- AFM Microscopes
- Setups for Exfoliation of 2D Crystals
- Setups for Synthesis and Functionalization of Colloidal Nanostructures
- Setups for Construction of Optoelectronic Devices
- Numerous Monochromators and Detectors (including multichannel detectors and 2D cameras)
- Numerous Cryostats (including magnetic cryostats and microstats

Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Laboratory for Optical Spectroscopy of Nanostructures

OSN Laboratory specializes in utilizing many different optical spectroscopy techniques to investigate novel, usually semiconducting materials, low-dimensional systems and nanostructures. It covers also fabrication technology and is supported by theoretical modelling. It concerns numerous subjects and it is realized by the following thematic groups, activity of which is described more in details in the Lab website

- Colloidal Nanostructures
- Emerging Semiconducting Materials
- Epitaxial Nanostructures for Infrared Photonics
- Mid-Infrared Spectroscopy
- Nonlinear Quantum Photonics
- Physics of Two-Dimensional Structures

Contact:
Head of the Laboratory
Grzegorz Sęk
+48 71 320 45 73
osn.pwr.edu.pl

Faculty of Fundamental Problems of Technology

Wroclaw University of Science and Technology

Educational Labs

Eyewear technology laboratory

- The eyewear technology laboratory offers equipment for teaching glass and optical aid production.
- Students learn to create prescriptions for eyeglasses.
- Students master each stage of eyeglass making.
- Familiarization with various lenses and frames is included.
- Students practice dotting, centering, grinding, and mounting lenses.

Optical workshop laboratory

- Classes emphasize laboratory and technological aspects of optical element manufacturing.
- Students create optical components with spherical and flat surfaces.
- Workshop measurements are applied for planning and production.
- Students formulate requirements for optical surfaces.
- Quality of optical surfaces is checked during the learning process.

Optical instruments laboratory

- Classes are conducted in a laboratory setting.
- Students learn the principles of operation of devices and measuring instruments.
- Instruction covers optical systems used in optical measurements.
- Familiarization with the parameters of optical glass is included.
- Students study components of optical systems and optical arrangements.
- Measurement methods for optical parameters are taught.

Optical fiber laboratory

- Students learn about optical fibers through practical experiences.
- Training includes splicing fiber optics.
- Students measure parameters of optical fibers.
- Familiarization with advanced optical devices is provided.

Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Cooperation with National and International Centres

OPUS-25, NCN – cooperation with Australia

An ongoing long-term collaboration with the Contact Lens & Visual Optics Laboratory of the School of Optometry and Vision Science at Queensland University of Technology, Brisbane.

Australian Research Council Centre of Excellence for Future Low-Energy Electronics Technologies (ARC FLEET) – cooperation with Australia

The Department of Experimental Physics, represented by Prof. Grzegorz Sęk and Dr. Maciej Pieczarka, partnered in an international research project (2019-2024) focused on excitonic and polaritonic superfluids. The ARC FLEET collaboration involved 8 leading Australian universities and 18 international partners, leading to research visits between Wrocław and Australia and resulting in numerous high-impact publications, including in Science Advances and Nature Communications

www.fleet.org.au

Faculty of Fundamental Problems of Technology

Cooperation with National and International Centres

RECOOP HST Consortium – cooperation with USA

The Department of Experimental Physics is part of the RECOOP HST Consortium, a research group focused on enhancing prevention and treatment of public health issues through multinational collaboration. Led by Cedars-Sinai, the consortium includes 17 universities and organizations across eight countries in Central and Eastern Europe and the United States.

Polish Consortium of High Magnetic Field Users

The Polish Strong Magnetic Field Users Consortium, which is a member of the European Magnetic Field Laboratory providing a unique facility to study properties of matter in extreme magnetic fields.

www.emfl.eu

EMFL
European Magnetic Field Laboratory

Wrocław University of Science and Technology

Cooperation with Academia

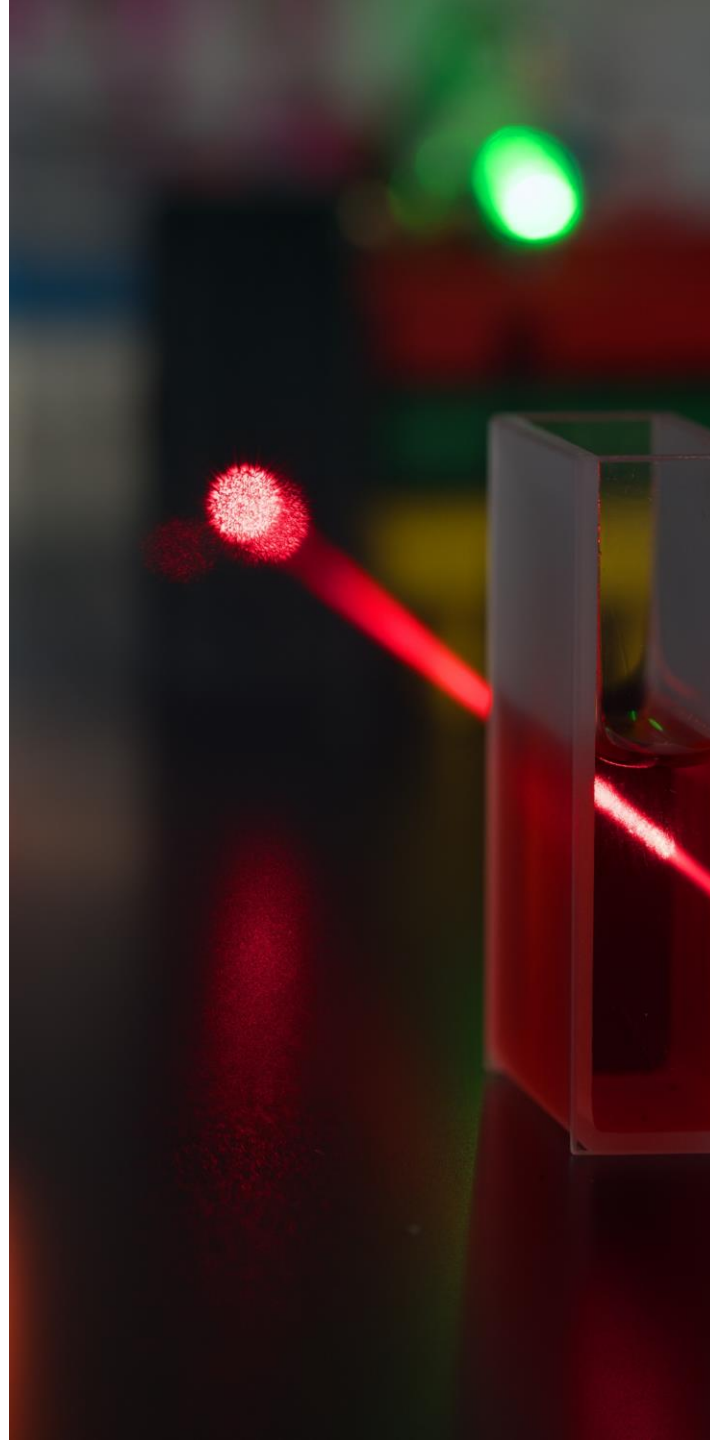
The Maria Curie-Skłodowska University in Lublin

Several different joint projects, including MEASTRO and SONATA BIS (both from National Science Centre, Poland)

- Long-standing collaboration on innovative optical fibers
- Focus on sensing applications and nonlinear wavelength conversion

Key activities include:

- Designing optical fibers
- Modeling light propagation in standard and non-standard fibers
- Characterizing fiber properties (e.g., attenuation, bending losses, chromatic dispersion)
- Demonstrating sensing applications utilizing developed fibers



Faculty of Fundamental Problems of Technology

Cooperation with Academia

NCN project Maestro:
“New optical properties and novel applications of semiconductor epitaxial nanostructures”

The main aim of the project was to investigate the optical and electronic properties of novel semiconductor nanostructures fabricated epitaxially, such as quantum dashes or quantum rods, with respect to their potential for electronic or photonic applications.

Julius-Maximilians-
UNIVERSITÄT
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UNIKASSEL
VERSITÄT

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

TU/e EINDHOVEN
UNIVERSITY OF
TECHNOLOGY

Wrocław University of Science and Technology

Cooperation

QuantERA Call 2021

EQUAISE – Enabling QUAntum Information by Scalability of Engineered quantum materials

equaise.pwr.edu.pl

Co-funded by the European Union

Universidad de Oviedo

Nanosystems and Technologies GmbH nanoplus

Universität Bremen

CARL VON OSSIETZKY UNIVERSITÄT OLDENBURG

Consiglio Nazionale delle Ricerche

SAPIENZA UNIVERSITÀ DI ROMA

Faculty of Fundamental Problems of Technology

Wrocław University of Science and Technology

Cooperation

QuantERA Call 2023

FiGAnti – Fibre-Coupled GaSb Quantum Dot Tuneable Single-Photon Sources for Field Deployed Quantum Key Distribution

quantera.eu/disco/

CONSORTIUM

- Wrocław Tech,
  Department of Experimental Physics
- University of Würzburg,
  Technische Physik
- Tampere University,
  Optoelectronics Research Centre
- Photonique Electronique et Ingénierie Quantiques
- KTH Royal Institute of Technology,
  Quantum Nanophotonic

Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Tampere
University

cea
Commissariat à l'énergie atomique
et aux énergies alternatives

KTH
VETENSKAP
OCH KONST
KTH
Royal Institute of Technology

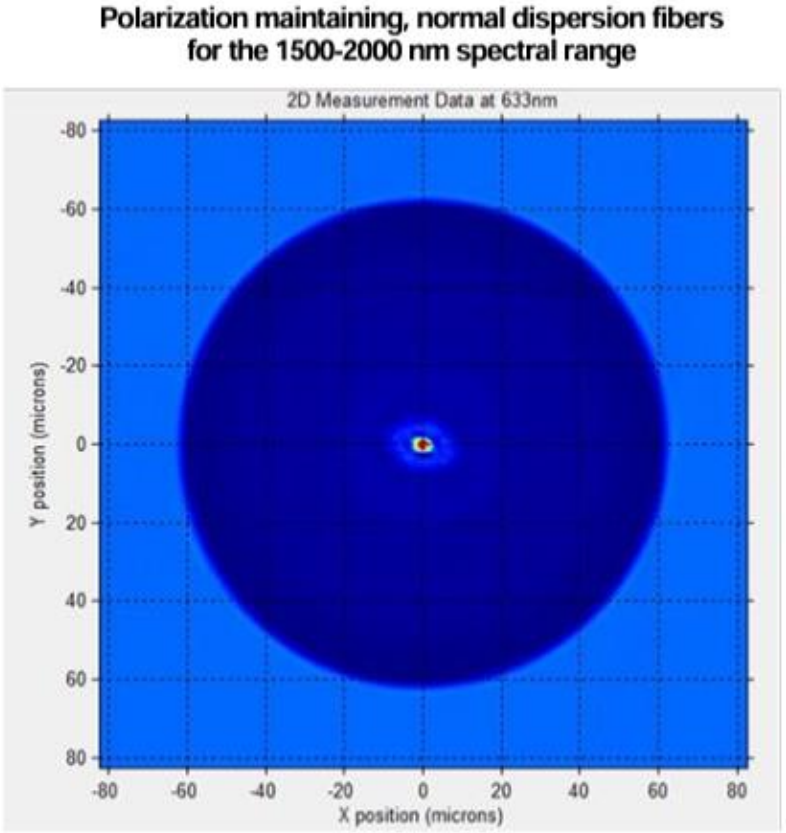
Faculty of Fundamental Problems of Technology

Cooperation with Industry

FIBRAIN®

Smart Growth Operational Program 2014-2020, project title: Polarization maintaining, normal dispersion fibres for the 1500-2000 nm spectral range.

Developing a new type of optical fiber that is characterized by all-normal dispersion (ANDi) with a minimum value -50 ps/(nm · km) in a spectral range of 1500-2000 nm with a flattened dispersion curve. The developed fiber is currently offered by Fibrain (model ECF2000K).



Wroclaw University of Science and Technology

International projects

Project of EU Horizon 2020 Programme: "iCspec - iCspec – In-line Cascade Laser Spectrometer for Process Control"

- Nanoplus Gerbrunn, Germany
- III-V Lab, France
- Siemens, Germany
- CEA Leti, France
- University of Würzburg, Germany
- Airoptic, Poznań, Poland
- PREEM AB, Sweden

cordis.europa.eu/project/id/636930

Project of the UE 7th Framework Programme: "WideLase – Monolithic Widely Tunable Interband Cascade Lasers for Safety and Security"

- Nanoplus Gerbrunn, Germany
- University of Würzburg, Germany
- Airoptic, Poznań, Poland
- Mach8 Lasers, the Netherlands
- Norsk Elektro Optikk, Norway

cordis.europa.eu/project/id/318798

Project of the UE 7th Framework Programme: "DeLight – Development of low-cost technologies for the fabrication of high-performance telecommunication lasers"

- Tampere University of Technology, Finland
- University of Würzburg, Germany
- University of Kassel, Germany
- Mergeoptics, Germany
- Modulights, Finland
- III-V Lab, France
- Color Chip, Israel
- Technion – Israel Institute of Technology, Israel
- Politecnico di Torino, Italy

cordis.europa.eu/project/id/224366

European Commission | CORDIS EU research results

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International projects

Laboratoire Interdisciplinaire Carnot de Bourgogne

icb

Dijon, France

Polonium grant, currently from Polish National Agency for Academic Exchange NAWA

Study nonlinear effects in optical fibers, focusing on wavelength conversion in multimode fibers.

icb.cnrs.fr

Wroclaw University of Science and Technology

Cooperation with Academia and Industry

Key Areas

- **Joint Teaching and Learning**
  Joint teaching programs
  Career path collaboration
- **Joint Research and Innovation**
  Research team matchmaking
- **Student Mobility**
  Hybrid and on-site courses at partner universities
  International internships
  Joint master's programs
  Diversity, integration, and team building

unite!

NAWA POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE

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International projects

Horizon Europe Project:

Transforming Quantum Photonic Integration QPIC1550

As the first project of its kind on a global scale, QPIC1550 aims to merge the realms of quantum mechanics and photonics technology on a single, scalable platform.

This ambitious initiative, funded by the European Commission's Horizon Europe program, brings together leading academic institutions and industry partners from across Europe, all dedicated to harnessing the unprecedented potential of quantum technologies.

DTU Technical University of Denmark

LIGENTEC

QKME

Tyndall National Institute Institiúid Náisiúnta

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

MARTEL innovate

ΠΑΝΕΠΙΣΤΗΜΙΟ ΔΥΤΙΚΗΣ ΑΤΤΙΚΗΣ UNIVERSITY OF WEST ATTICA

POLITECNICO MILANO

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International projects

Horizon Europe Project:

QCEED - Quantum Dot coupling engineering (and dynamic spin decoupling/deep nuclei cooling): 2-dimensional cluster state generation for quantum information processing

QCEED will demonstrate, design and fabricate novel source of on-demand 2-dimensional cluster states , based on site-controlled semiconductor quantum dot “molecules”, with transformational impact potential on quantum information processing.

Consiglio Nazionale delle Ricerche

III-V lab

dayone

Universitas Masarykiana Brunensis

Tyndall National Institute Institiúid Náisiúnta

cea Commissariat à l'énergie atomique et aux énergies alternatives

Wroclaw University of Science and Technology

Study at the faculty

BSc and MSc studies

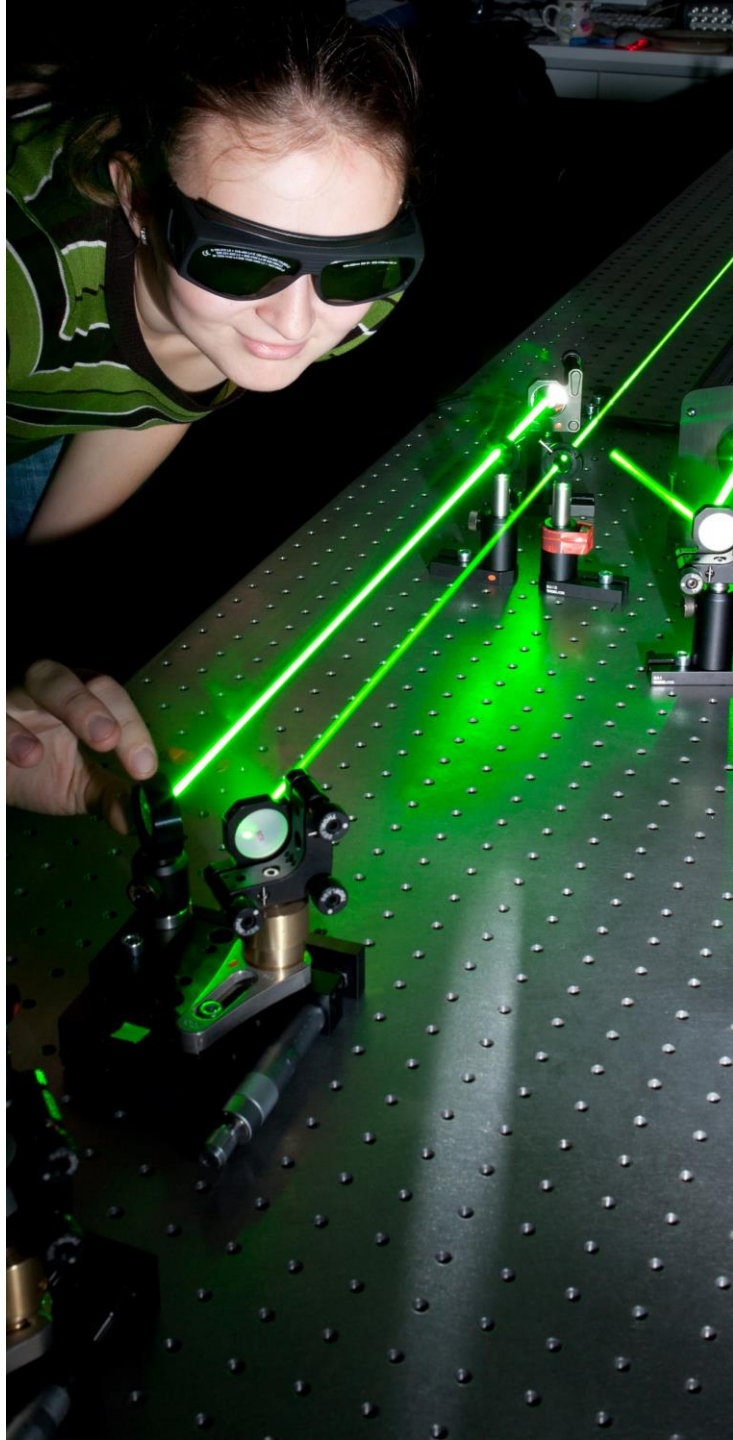
- Big data analytics
- Biomedical Engineering
- Optics
- Quantum engineering
- Technical Physics
- Medical Informatics

Doctoral Studies in two disciplines:

- Biomedical Engineering and Physical Sciences

Postgraduate Studies

- Optometry



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Studies in cooperation with foreign universities

- Erasmus + Blended Intensive Programme „Modern Topics and Methods in Biomedical Research” 22.08.2022-14.10.2022

- Erasmus + Blended Intensive Programme „Recent Trends in Biomedical and Biophysical Research” 29.08.2023-17.10.2023

- Erasmus+ Blended Intensive Programme „Modern Trends in Nanotechnology for Medical Science – Research and Applications” 15.07.2024-11.09.2024

universidade de aveiro

UNIVERZITA KOMENSKÉHO V BRATISLAVE

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Erasmus+ Programme

Erasmus+ offers the opportunity for higher education institutions to send students and staff abroad (in other Programme countries or other Partner countries) to study, teach, or train at participating institutions, as well as to participate in a traineeship.

Erasmus+ Exchange for Training:

- Nordita, The Nordic Institute for Theoretical Physics, Stockholm
- Universidad Politecnica de Cartagena, Spain
- University of Amsterdam, Holland
- Karlstad University, Sweden
- Walter Schottky Institute of Munich Technical University
- Boston University, USA
- ETH Zurich, Switzerland
- University of Toulouse, France
- University of Limerick, Limerick, Ireland
- V.N. Karazin National University in Kharkiv, Charkow, Ukraine
- Université Bourgogne-Franche-Comté, Dijon, France
- Center for Visual Science at the University of Rochester, USA
- Fizykalni ustav AV CR, Prague, Czech
- Universita degli Studi di Genova, Genua, Italy
- Shanghai Jiao Tong University, Szanghaj, China
- University of Stirling, Stirling, Ireland
- Universite de Franche Comte, Besancon, France
- University of Aveiro, Aveiro, Portugal

Erasmus+ Exchange for Didactic

- Universidade do Minho, Braga, Portugalia
- Universidad Politechnica de Valencia, Spain
- CES Centre of English Studies, Dublin, Ireland

Erasmus+ Studies

- University of Limerick, Ireland
- Instituto Politécnico de Coimbra, Portugal
- KU Leuven, Belgium
- Universidad de Alicante, Spain

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Events and Teaching successes

- **The Academy of Young Explorers Centre at Wrocław University of Science and Technology** – amo.pwr.edu.pl
- Production of 3 **Popular Science Films**: "Phenomena. Light. Water. Energy" (collaboration between PWr and Camera Nero Studio) 2023 fenomeny.pwr.edu.pl
- **Podcast "Physics Without Mud"** (from September 2023) YouTube
- In the Frames of Science – weekly radio broadcast in RAM studio on technical inventions and scientists from PWr (September 2023 – June 2024) with Sebastian Lorenz from RAM radio
- **Polilab PWr** (from 2023 – 4 films popularizing science for high school pupils)
- **Interview: The Future is Now** – local television TVP3 (September 2024)
- **DFN since 2005 - annually**
- **Talent PWr (since 2022) Studium Talent**
- **Collaboration with high schools in Lower Silesia** (since 2016, supervision of 3 schools: ZSO KG, Świdnica II LO, Ossolińczyk Brzeg Dolny)
- Cooperation with talented youth from ALO, XIV LO, and III LO (since 2022)
- **PWr Challenge** (since 2017)
- Night of Laboratories, **Night of the Polytechnic** (since 2017)

Wrocław University of Science and Technology

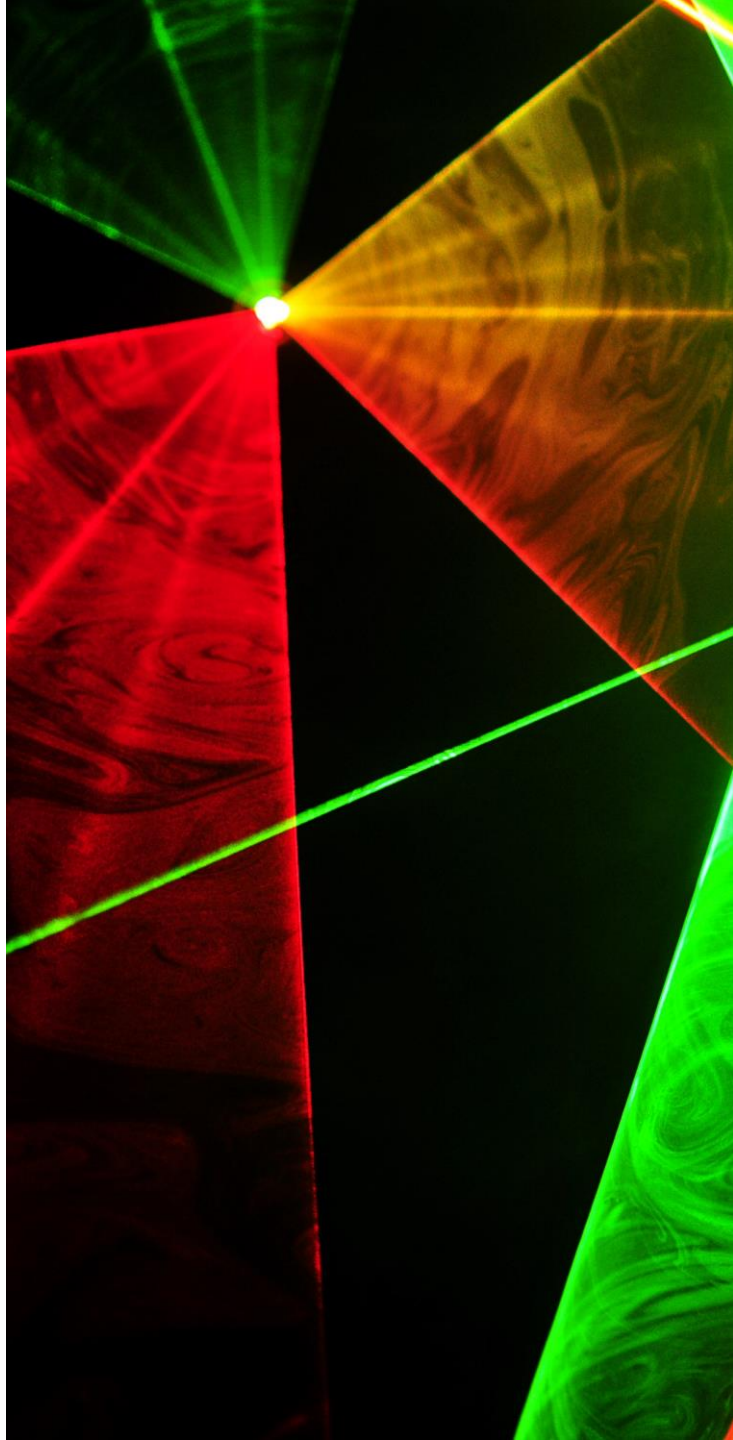
Achievements

Multiple awards in nation-wide competitions for the best MSc or Eng projects

- Nation-wide competition for the best MSc/Eng thesis in the field of optoelectronics: Grzegorz Gomółka #1 in 2020, Marta Bernaś #2 in 2020, Monika Krajewska #3 in 2021, Przemysław Chmielowski #1 in 2023.
- Nation-wide competition for the best PhD/MSc/Eng thesis in the field of electronics, computer science or telecommunication: Przemysław Chmielowski #2 in 2024.

Scholarships for students from the Ministry of Science and Higher Education

- Maciej Doniec, Katarzyna Hołodnik, Arkadiusz Lipecki, Jakub Pawłowski, Ewa Żuberek – 5x in 2023
- Antonina Bieganowska, Przemysław Chmielowski, Justyna Olejnik – 3x in 2024



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Student activities

Student scientific associations

- SPIE and Optica Wrocław University of Science and Technology
- BioModel
- Nabla Physics Student Society
- BioNanopor
- Signum Student Society
- VISUS Scientific Club
- Nanoegnineering Science Association NANOIN

Student Government

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Wrocław
University
of Science
and Technology

Faculty of Fundamental
Problems of Technology

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50-370 Wrocław

building A-1

wppt.pwr.edu.pl