

Standa

- www.standa.lt
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• Vibration Isolation • Micro-/Nanopositioning • Pulsed picosecond lasers

Brief entity description

Standa was founded in Vilnius, Lithuania in 1987 and now has more than 160 employees working at the company. Standa has its own industrial base that includes CNC turning, milling, grinding machines. Standa's design department, while developing standard products presented in Standa's catalogue (such as motorized and manual translation and rotation stages, motion controllers, optical tables, vibration isolation systems, optical mounts and holders, optics, dpss lasers and etc.) also develops the equipment for OEM customers. Some examples of it, after the agreement with OEM customers, are shown on this website. Standa currently has several laser product development laboratories.

Nowadays Standa continues developing and producing diode pumped lasers, opto-mechanical components and motion control devices (direct drive positioners and hexapods are among them). Standa has a highly skilled marketing team assisting you to make the correct choice of Standa products and together with our OEM customers, create the products you require containing mechanics, optics and lasers. Standa products are distributed to more than 90 countries and represented by more than 25 companies worldwide. Many of our products emerge from close relationship and conversation with our customers. We hope you can also realize your ideas in our new products.

Key technologies and technical facilities

- ⦿ DPSS laser production and assembly facility
- ⦿ Mechanical production and cleaning facility
- ⦿ R&D in SLM sub nanosecond/picosecond DPSS lasers
- ⦿ Micro-/Nano metrology & calibration lab
- ⦿ R&D in Servo control
- ⦿ R&D motion control
- ⦿ OEM Electrical, electronic design facility

Current and planned developments with potential for use in space

- ⦿ Linear micro positioning actuators for space
- ⦿ Mirror mounts for space
- ⦿ LYBS

Desired contacts

- ⦿ **Partner 1:** integrators of precision micro-/nano- positioning devices
- ⦿ **Partner 2:** integrators and designers of laser beam delivering systems
- ⦿ **Partner 2:** integrators of SLM laser systems
- ⦿ **Supplier 1:** suppliers of raw materials and parts (mechanical & optical) for space application
- ⦿ **Customer 1:** scientific or commercial space system integrator



Klaipeda University

- <https://www.ku.lt/en/>, <http://apc.ku.lt/>
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● **Earth Observation-based downstream applications** ● **modelling and operational forecasting services** ● **Human recourse, capacity building and training**

Brief entity description

Klaipeda University (KU) is the only higher academic institution in Lithuania, responsible for the development of environmental sciences and maritime technology research as well as for training of human resources. Marine Research Institute is a Research and Development unit within the KU. The Unit has well defined research directions and leadership in: 1) Earth Observation-based downstream applications and services for mainland, coastal zone and marine management; 2) In situ research on marine and coastal natural resources and ecosystem services; 3) Development and application of innovative monitoring, data management, IT and modelling methods for marine, coastal and mainland zone; 4) The integrated spatial marine planning. Current technological development and services:

- Remote sensing, airborne and unmanned aerial vehicles (UAV) imagery validation and testing
- Flight performance of UAV
- Remote Sensing data processing
- Measurements and analysis of environmental parameters
- Mapping and monitoring of environmental habitats, natural hazards
- Spatial multi-criteria GIS-based assessment of environmental impact analysis

The internationality and leadership in Earth Observation sector is justified by coordination of TODAY contract under ESA PECS program in Lithuania (ITT AO8582) and involvement in the international innovation projects EOMORES (H2020 EO-1-2016), INFORM (FP7).

The Institute is facilitating science, business cooperation, collaboration with national authorities and stakeholders.

Key technologies and technical facilities

- ⊙ Remote Sensing data processing and modelling
- ⊙ Earth Observation-based products calibration/validation
- ⊙ Computational IT Facility
- ⊙ Research and Development laboratory and field research infrastructure

Current and planned developments with potential for use in space

- ⊙ **Earth Observation-based downstream service for water management:** services for operational climate and water quality monitoring in mainland and coastal environment to support the governmental institutions and private sector.
- ⊙ **Ecosystem status assessment and monitoring based on remote sensing and ecological modelling:** mapping of natural resources, evaluation of ecosystem goods and services by means of remote methods (airborne and underwater cameras, sonars) and ecological modelling for integrated marine and coastal management.
- ⊙ **Operational monitoring and service for natural hazards:** service for coastal erosion prediction, detection and prevention by combining Space products and technologies, ground thruthing capacities and modelling

Desired contacts

- ⊙ **Research Institution of Small-Medium Enterprise Company:** companies producing and developing remote operated airborne and underwater systems, platforms and cameras (RGB, multispectral and hyperspectral).
- ⊙ **Governmental water authorities:** national and regional parks, municipalities, Environmental Protection Agency, Environmental Ministry.
- ⊙ **Private water authorities:** private companies dealing with water management (including fishery and aquaculture), water quality monitoring and environmental impact assessment and reporting.



KLAIPĖDOS
UNIVERSITETAS

National Centre of Remote Sensing and Geoinformatics "GIS – Centras"

- www.gis-centras.lt
- info@gis-centras.lt

-
- responsible for update and distribution of the national official geographic databases

Brief entity description

SE „GIS-Centras“ is in charge of management and development of the Lithuanian Spatial Information Infrastructure portal (www.geoportal.lt), national georeference base cadaster, development of new spatial information web services. The enterprise is developing a geographic information services based on the cloud technology. Development of training center in the field of geoinformatics, aerial photography, remote sensing and scientific research together with applications and engineering is also planned as important future activities of the enterprise.

Key technologies and technical facilities

- ⦿ GIS
- ⦿ Spatial information infrastructure portal
- ⦿ Data processing
- ⦿ Data dissemination

Current and planned developments with potential for use in space

- ⦿ **Current/planned development 1:** Agriculture application from satellite data / PECS.
- ⦿ **Current/planned development 2:** Crop monitoring, using satellite data.

Desired contacts

- ⦿ **Partner 1:** any company, which wants to contribute in Earth observation application
- ⦿ **Supplier 1:** DIAS
- ⦿ **Customer 1:** all companies which are interested in our remote sensing services



Vilnius Gediminas Technical University

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- High Education • Science and engineering

Brief entity description

Vilnius Gediminas Technical University (VGTU) is an innovative Lithuanian University, educating highly qualified and creative specialists. Established in 1956 VGTU is one of the biggest research universities in Lithuania with a focus on technologies and engineering and strong emphasis on university-business cooperation. The University is the leader among the institutions of technological science education, ensuring modern studies, oriented towards the labour market.

VGTU is the second university in Lithuania with more than 10 thousand students at Bachelor, Master and Doctoral degree studies (over 10% of international exchange and degree students) and over 1000 members of the academic scientific staff engaged in research works (72% with PhD degree). VGTU comprises 9 faculties, 1 institute and 40 departments. The University is the leader among the institutions of technological science education, ensuring modern studies, orientated to the labour market. VGTU provides over 100 study programs, around 30% of programs are taught in English.

VGTU is ranked among top 551-600 in QS WUR 2017, has received 10 A grades in U-Multirank 2017 and takes the 43th position in QS EECA ranking 2016.

Research is carried out in 3 research centers (Civil Engineering Research Centre; Competence Centre of Intermodal Transport and Logistics; Technology Centre for Building Information and Digital Modelling), 14 institutes (including Institute of Applied Computer Science and Research Institute for Telecommunication) and 34 research laboratories (including Research Laboratory of Security of Information Technologies). Research priorities at the university correspond the national and international research priorities and trends especially in technical sciences. VGTU has defined 7 priority research areas, that cover Sustainable Building, Environmental & Energy Technologies, Sustainable Transport, Mechatronics, Information and Communication Technologies (including Information and Cyber Security), Fundamental Research on Materials and Processes, Technology Management and Economics.

VGTU has the experience in coordination and participation in international programs, including EU-Asia-link, ALFA III, Tempus, LLP/ERASMUS, ERASMUS MUNDUS, Leonardo da Vinci, Framework 6-7, Horizon2020, Eureka, etc. VGTU is a partner or coordinator of about 30 international educational projects and up to 50 international research projects. This involvement contributes to advancement of the university curriculum and facilitates international teamwork of the academic community.

Knowledge and Technology Transfer Centre was created in 2014. The main competencies of centre are the promotion of commercialization of R&D results, knowledge and technology transfer, science and business partnerships, international cooperation in R&D and innovation, development of new innovative business in University.

Key technologies and technical facilities

- ⦿ On board control and software for nanosatellites
- ⦿ Spacecraft thermal analysis methods and tools
- ⦿ Optomechanical systems for nanosatellites
- ⦿ Laboratory of Micro and Nano electronics systems design and research
- ⦿ Laboratory of thermal insulating materials and acoustic
- ⦿ Laboratory of composite materials
- ⦿ Institute of mechanical science
- ⦿ Laboratory of experimental mechanics
- ⦿ Laboratory of material research
- ⦿ Laboratory of the photo electricity technologies
- ⦿ Laboratory of Parallel Computing
- ⦿ Institute of telecommunication research
- ⦿ Institute of high magnetic fields

Current and planned developments with potential for use in space

- ⦿ Development of spacecraft thermal design optimization methods
- ⦿ Development of satellite multidisciplinary design and optimization methods
- ⦿ Research and development of miniaturized thermal control louvers for nanosatellites
- ⦿ Research and development of miniaturized optomechanical laser beam steering systems for nanosatellites
- ⦿ Development of hardware-in-the-loop test methods for nanosatellite subsystems

Desired contacts

- ⦿ **Partner 1:** Companies and universities working in the field of small satellite missions and technologies, especially related to optomechanical systems
- ⦿ **Supplier 1:** Suppliers of optomechanical and optoelectronic systems and components suitable for use on small satellites
- ⦿ **Customer 1:** Companies interested in advanced spacecraft thermal design optimization methods



Institute of Mechatronics Kaunas University of Technology

- <https://en.ktu.edu/>
- andrius.vilkauskas@ktu.lt, valdas.grigaliunas@ktu.lt

● Nano satellites ● Earth observation

Brief entity description

The institute exploits the interdisciplinary of (bio)mechatronics to conduct collaborative research on novel actuators and sensors for various application in manufacturing, aerospace and microsystems. The research focused on technologies for energy harvesting and distributed sensor networks, high resolution positioning.

Key technologies and technical facilities

- ⊙ S-band
- ⊙ Attitude control, vibro-motors
- ⊙ Parabolic antenna, GTEM cell
- ⊙ 3D LDV, gravity load testing, vibro testing

Current and planned developments with potential for use in space

- ⊙ **High resolution attitude control:** piezo-reaction sphere coupling with reaction wheels.
- ⊙ **Earth observation:** EO satellites data coupling with data sensors gathered on the ground for a various application (including water level and water quality, environment pollution estimation).

Desired contacts

- ⊙ **Partner 1:** EO Institutes and companies, companies working with attitude control, satellites hardware development companies
- ⊙ **Supplier 1:** friction and wear resistant coatings, precise mechanical manufacturing
- ⊙ **Customer 1:** attitude control, communication, distributed sensor network application



Elsis PRO, UAB

- www.elsispro.com
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• Software development defence • Software development aviation

Brief entity description

Elsis is the largest defence company in Lithuania. Our software division is growing as a trusted innovation partner for large defence and air traffic projects. Our next frontier is space.

We help our customers make better decision through developing innovative decision support software and connectivity solutions by combining our passion for data integration, big data, advanced analytics, lean philosophy, simulation based decision making and newest technologies within defence and air traffic.

Key technologies and technical facilities

- ⦿ NATO SECRET approved facilities and staff
- ⦿ ISO 9001, ISO 27001 certified
- ⦿ Java, JavaScript, C++, C#
- ⦿ Big data, advanced analytics
- ⦿ IoT Data Distribution Services middleware
- ⦿ System integration, datalinks and messaging

Current and planned developments with potential for use in space

- ⦿ **HIGH END CAMERA IN NANOSATELLITE:** For an European Ministry of Defence innovation project, Elsis is consortium lead on a proposal for TRL-5 demonstration how state-of-the-art camera in a nanosatellite in 550 km. orbit will radical change access to low cost earth pictures – aiming to provide real time high resolution images/video to defence (and civil domains)
- ⦿ **SEAMLESS INTEGRATED SPACE AND GROUND DATA NETWORK:** In partnership with a large nanosatellite developer, Elsis will develop a data network, leveraging best practice IoT network technology from defence, to establish a seamless integrated network between space to ground, ground to space and space to space, improving connectivity and constellation management.

Desired contacts

- ⦿ **Partner 1:** large system integrator for participation in international R&D programs
- ⦿ **Customer 1:** large system integrator, open for R&D outsourcing partnerships or sub-contracting on specific missions



UAB Optolita (doing business as EKSMA Optics)

- www.eksmaoptics.com
- info@eksmaoptics.com

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- **Laser optics and crystals for laser and laser systems manufacturers**
 - **Electro-optical Pockels cells and ultrafast pulse picking systems**

Brief entity description

EKSMA Optics is a manufacturer of precision laser components, used in the high power lasers, laser systems and in the optical instruments. We export our components worldwide for scientific, industry, medical and defense markets. The company was established in 2006 by reorganization of EKSPLA company which have more than 30 years of experience of lasers and laser components manufacturing. Product range includes laser optics for high power lasers, nonlinear and laser crystals, Pockels cells with DKDP, BBO, KTP crystals and HV drivers, spherical, aspherical and conical lenses, optical systems – beam expanders, motorized focusing modules and ultrafast pulse picking systems.

The Company owns coating facility for laser optics and crystals based on advanced ion beam sputtering (IBS) technology, production facility of flat optics made of N-BK7, UVFS, Infrasil and Suprasil, polishing facility of laser frequency conversion crystals DKDP, BBO, LBO, KTP, ZnGeP₂, AgGaSe₂, CNC manufacturing facility of precision grade spherical, aspherical and conical lenses, Pockels cells BBO, DKDP and KTP assembling facility, electronics department for ultrafast laser pulse picking systems manufacturing.

EKSMA Optics also has clean rooms with controlled environment (temperature and humidity) for electro-optical and optical systems components assembling and quality control laboratories.

The company is an ISO 9001:2015 certified.

Key technologies and technical facilities

- Ion Beam Sputtering technology
- CNC lens manufacturing facility for spherical, aspherical and conical lenses
- IBS coating facility for laser optics and crystals
- Pockels cells and pulse picking systems manufacturing department

Current and planned developments with potential for use in space

- Current/planned development 1: IBS AR coatings for nonlinear SHG and THG LBO crystals.
- Current/planned development 2: IBS Coatings for electro-optical KTP crystals.
- Laser optics and crystals coated with non-porous, reliable, long lifetime dielectric IBS coatings.

Desired contacts

- Partner 1: scientific partner with labs for qualification and some tests of finished optical components which we can not perform in our QC labs. Possible partner – owner of advanced polishing technology for laser optics and crystals (like MRF, diamond turning, etc..).
- Supplier 1: raw materials manufacturer – blanks of glasses, crystals, fused silica.
- Customer 1: laser manufacturer or laser system integrator.



Workshop of Photonics ® (legal name UAB Altechna R&D)

- www.wophotonics.com
- info@wophotonics.com

• Laser Microfabrication • Femtosecond Technologies and Workstations

Brief entity description

Workshop of Photonics ® develops solutions and instruments related to micromachining almost any material by femtosecond laser pulse. The Company offers feasibility studies, custom design workstations for research and production purposes, develops and transfers technologies and processes dedicated to ultra-precise fabrication of transparent materials, ceramics and metals including welding dissimilar materials. On-demand production on small scale is available upon results of related feasibility studies preceding the production.

Key technologies and technical facilities

- ⊙ Femtosecond laser micromachining
- ⊙ Laser Induced Chemical Etching
- ⊙ R&D laboratory
- ⊙ Small scale production line

Current and planned developments with potential for use in space

- ⊙ **Current/planned development 1:** Precise fabrication of ultra-resistant materials for use in mechanical and optical assemblies in space.
- ⊙ **Current/planned development 2:** Texturing of material surfaces with the purpose of reducing friction.

Desired contacts

- ⊙ **Partner 1:** Supplier to ESA/ESTEC providing mechanical and/or optical assemblies
- ⊙ **Supplier 1:** None
- ⊙ **Customer 1:** Supplier to ESA/ESTEC providing mechanical and/or optical assemblies; acceptor of laser microfabrication technology

Member of



UAB Si Femto

- www.sifemto.com
- vidas@sifemto.com

• ASIC Design Service • ASIC IP Provider

Brief entity description

Since its inception in 2008, Si Femto has been providing Integrated Circuit design services. Our main goal is to help customers develop ASICs and/or ASIC/FPGA based systems for application in precision instrumentation, fiber-optic and wireless communications.

Key technologies and technical facilities

- ⦿ IC design from specifications to silicon
- ⦿ Layout design
- ⦿ RTL design (VHDL, Verilog)
- ⦿ Full backend cycle from RTL to GDS
- ⦿ High speed, mixed-signal ASIC design services
- ⦿ Analog ASIC design services

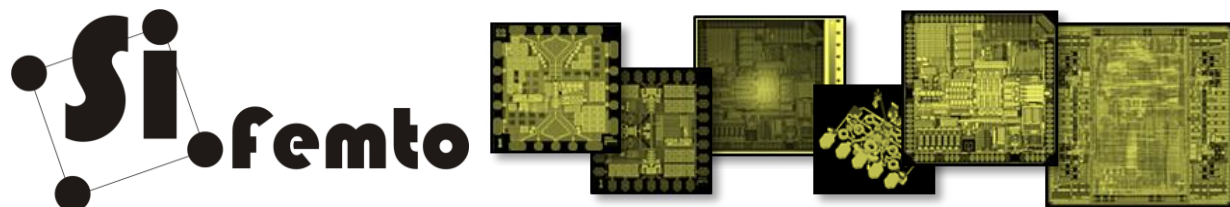
Current and planned developments with potential for use in space

- ⦿ **A Signal Processing ASIC for Synthetic Aperture Based EO Instruments:** The ASIC normalizes, digitizes and cross-correlates 128 (64x2) signals from separated single-ended receivers. Each channel in the ASIC includes a variable gain amplifier (VGA) enclosed in a programmable automatic gain control (AGC) loop to maintain the ratio of the digitizer comparators thresholds at the predefined constant level, independent from the input signal levels. 2 GHz sampling clock signal for 2-bit ADC with clock delay adjustment circuit. Cross-correlation results are integrated, with programmable integration time (max 11ms).
- ⦿ **A Rad-Hard Sigma-Delta ADC:** Sampling rate 3.2KS/s with oversampling factor of 512, differential input, ENOB>16bit.

Desired contacts

- ⦿ **Partner 1:** Earth observation sector.
- ⦿ **Partner 2:** Synthetic aperture based instruments.
- ⦿ **Supplier 1:** Laboratory capable to verify ASIC radiation hardness.
- ⦿ **Customer 1:** ASIC design/development teams.

Entity Logo & Relevant Images



NanoAvionics

- www.n-aionics.com
- egle@n-avionics.com

- **Satellites market**
- **Satellite applications markets (IoT/M2M ; Earth Observations (EO); ADS-B, an aircraft surveillance ; AIS, an automatic tracking system used for vessels; etc.)**

Brief entity description

NanoAvionics is a nanosatellite mission integrator focused on delivering new generation satellite buses and propulsion systems for the satellite applications market. With facilities in North America and Europe, NanoAvionics' team consists of 45 driven and skillful employees: we have over forty successful satellite missions and projects under our belt, and we keep counting.

NanoAvionics is ISO 9001 certified, following a very high standard of quality management procedures.

NanoAvionics' main product - 6U satellite bus is based on a modular and highly integral design. It delivers extends payload volume and saves development costs for customers. M6P satellite bus enables customers to concentrate on the most important mission goals and deal with high-level mission implementation tasks only, such as payload development, integration, and support during the mission in orbit. The standard configuration of the nanosatellite bus is optimized for IoT, M2M, ADS-B, AIS, other commercial and emergency communication applications, and scientific missions.

M6P bus includes [propulsion system](#) capable to perform high-impulse maneuvers such as: orbital deployment, orbit maintenance, atmospheric drag compensation, precision flight in formations, orbit synchronization and atmospheric drag compensation. It results in extended satellite orbital lifetime uncovered new opportunities for the unique customer missions and significant savings on constellation maintenance costs.

Key technologies and technical facilities

- Propulsion systems
- Complete small satellites
- Satellite components



Current and planned developments with potential for use in space

Current/planned development 1: Chemical Propulsion System for the Growing Small Satellite Market (EPSS)

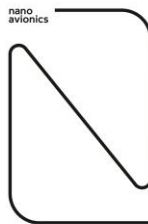
Current/planned development 2: Nanosatellite buses (M6P)

Current/planned development 3: Global internet of things (GIoT)

Planned developments 4 : 12 units nanosatellite bus

Desired contacts

- ⦿ **Partner 1:** companies focusing on Earth Observation and Communication missions
 - ⦿ **Partner/customer:** research institutions and universities
 - ⦿ **Customer 1:** large manufacturers which provide Earth Observation and Communication satellite platforms
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GEOMATRIX UAB

- www.geomatrix.lt
- info@geomatrix.lt

• Earth Observation • Agriculture

Brief entity description

GEOMATRIX UAB is an innovative SME registered in Lithuania 8 years ago and since then operating as a dedicated GMES/Copernicus Service Provider. The company is developing SAGRIS (www.sagris.eu) - a smart farming information back-end service with added value algorithms to provide information supply for the end-user smart farming application developers. We look forward to build a parcel-based Big Data statistical sampling and business analysis service based on a complex array of satellite sensors, intended for a world-wide scaling on cloud-based systems., but we will go as far as operational yield estimates and smart farming practical recommendations.

Key technologies and technical facilities

- ⊙ SAGRIS back-end service for smart farming apps (www.sagris.eu) ⊙
- ⊙ EO data parallel processing cluster ⊙

Current and planned developments with potential for use in space

- ⊙ **Current/planned development 1:** parcel-level CAP subsidies control and operational tracking of crops development and soil moisture with automated reporting on current status and trend
- ⊙ **Current/planned development 2:** operational yield estimates and smart farming practical recommendations.

Desired contacts

- ⊙ **Partner 1:** Smart farming or forestry end-user application developers and local traders
- ⊙ **Supplier 1:** Mapping of parcel boundaries, affordable optical imagery, DIAS infrastructure
- ⊙ **Customer 1:** Farming cooperatives, agriculture advisory services, paying agencies, universities & research institutes



LIDARIS

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• Laser Damage Testing

Brief entity description

LIDARIS is the high-tech company, which provides professional Laser-Induced Damage Threshold (LIDT) measurements.

Testing is available at nano-, pico-, femtosecond regimes and wide choice of wavelengths from UV to IR spectral range. Samples can also be tested in the extreme environments such as vacuum or cryogenic temperatures.

Standard and custom LIDT testing procedures are available. Lidaris provides detailed measurement reports containing easy to understand statistical data. Standard testing procedures are conducted in accordance with the guidelines of the latest existing international ISO standards 21254-1-2,-3 and -4. Non-standardized testing such as R-on-1, raster scan, micro-focus, rear-side testing is available on demand.

Key technologies and technical facilities

- ⦿ Laser-Induced Damage metrology
- ⦿ Services

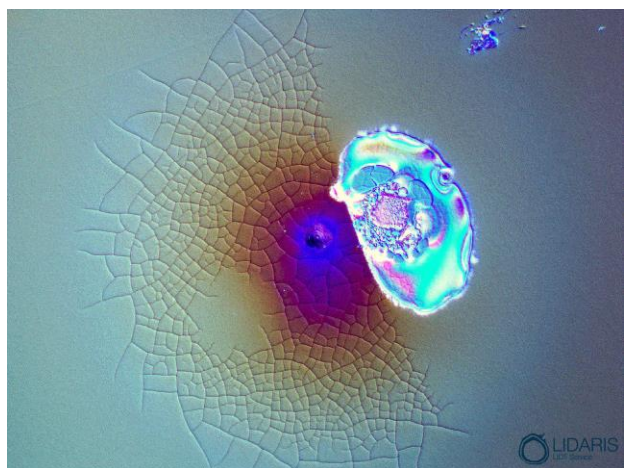
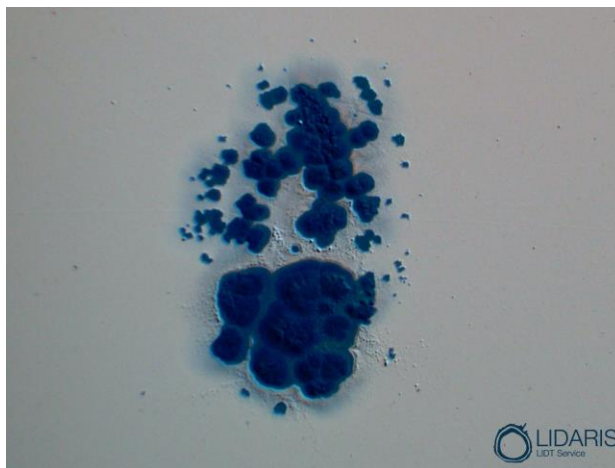
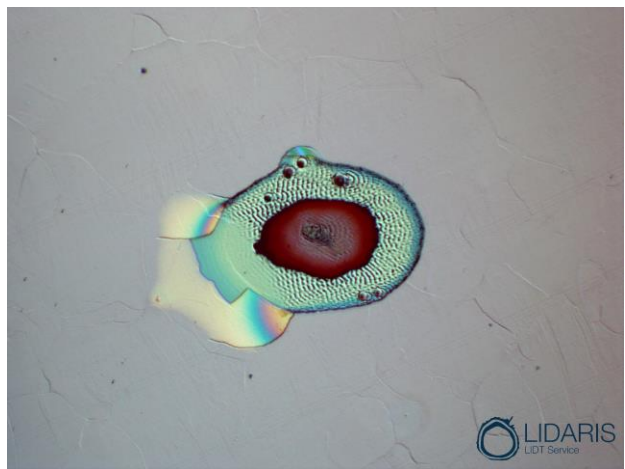
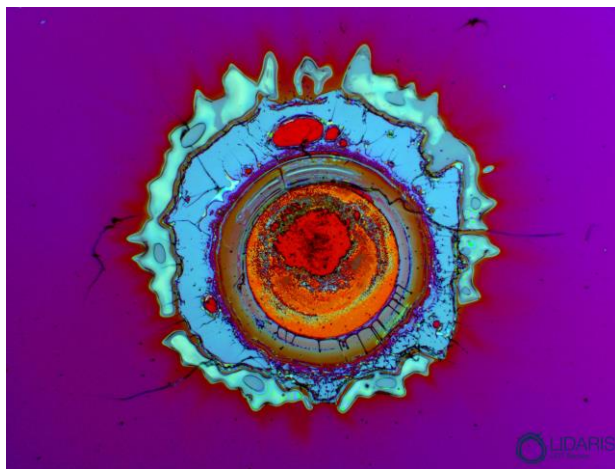
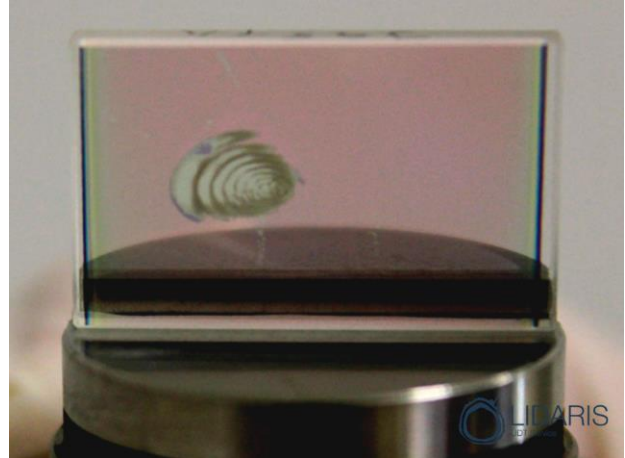
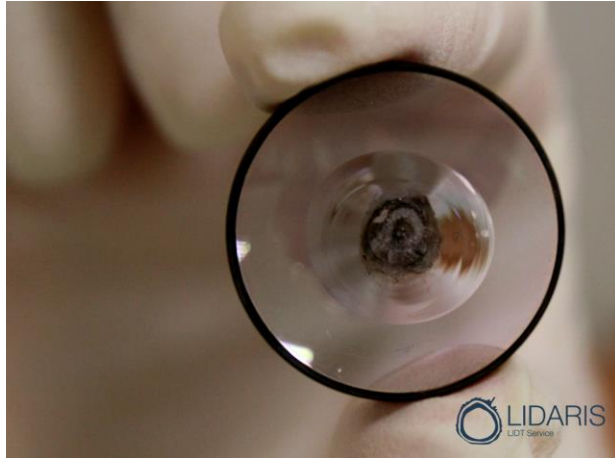
Current and planned developments with potential for use in space

- ⦿ **Current/planned development 1:** laser optics qualification and longevity testing for space application
- ⦿ **Current/planned development 2:** laser optics testing in vacuum.

Desired contacts

- ⦿ **Partner 1:** companies, which are interested in optics metrology development required for space applications.
- ⦿ **Customers 1:**
 - Laser optics companies
 - Manufacturers of the laser components and thin-film coatings
 - Laser systems engineers/designers
 - Space programs managers/engineers/designers interested in high power laser application and optics characterization in space.





Baltic Institute of Advanced Technology

- www.bpti.eu
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• Applied Research • RF Systems • AI • AR/VR

Brief entity description

Baltic Institute of Advanced Technology (BPTI) is a private, high tech oriented research institute. BPTI focuses on creating and developing new technologies and providing R&D services to other companies. BPTI strength comes from the ability to gather interdisciplinary research teams which can provide efficient solutions to difficult problems. Our experience ranges from private research projects to European level partnerships in Horizon2020 and EDA funded projects. Main projects focuses on data analysis, AR/VR technology applications. BPTI currently has two ESA – funded projects.

Key technologies and technical facilities

- ⊙ Data Analytics
- ⊙ Ultra-Wideband RF Systems
- ⊙ Artificial Intelligence
- ⊙ Satellite Image Analysis

Current and planned developments with potential for use in space

- ⊙ **Current/planned development 1:** Ultra-Wideband, Highly Sensitive Receiver System for Communication in Space Application.
- ⊙ **Current/planned development 2:** Ultra-Wideband Transmitter Front-End for Software Defined Radio High Data Rate Space Communication.

Desired contacts

- ⊙ **Partner 1:** Satellite image analysis & data modeling.
- ⊙ **Partner 2:** Data analytics & processing, AI.
- ⊙ **Customer 1:** End-user for Ultra-Wideband Receiver/Transmitter system.

BPTI

BALTIC
INSTITUTE OF ADVANCED
TECHNOLOGY

Center for Physical Sciences and Technology

- <https://www.ftmc.lt/en/>
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• Optoelectronics • New materials development

Brief entity description

CENTER FOR PHYSICAL SCIENCES AND TECHNOLOGY (FTMC) is the largest scientific research institution in Baltic States carrying out a unique fundamental research and technological development works in scientific fields of laser technologies, optoelectronics, nuclear physics, organic chemistry, bio and nanotechnologies, electrochemical material science, functional materials and electronics.

Key technologies and technical facilities

- ⦿ Molecular Beam Epitaxy
- ⦿ New material development
- ⦿ ISO7 (352 m²) and ISO5 (50 m²) clean room facilities
- ⦿ More than 20 high up-keep laboratories dedicated to new material investigation and development.

Current and planned developments with potential for use in space

- ⦿ **Infrared semiconductor laser diodes:** 0,7 – 20 μm, CW and pulsed lasers. Small, robust with low power consumption and with great beam parameters.
- ⦿ **Bismide based IR lasers:** The Plan for European Cooperating States (PECS) mission is an important step towards solving the problems of monitoring of CO₂ and methane in atmosphere as well in greenhouses. For these purposes the light sources operating in spectral bands around 1.16 - 1.57 μm are identified as the best candidates for active sensing of CO₂ and methane. The interest on bismide research is mainly motivated by development of more efficient and less temperature sensitive infrared light sources. These expectancies are based on a weaker than in other III-V compounds temperature dependence of the energy bandgap and on reduced non-radiative Auger recombination rates. As yet LED's and edge-emitting, Fabry-Perot laser diodes were realized only with active GaAsBi layers and GaAsBi/GaAs MQW. VECSEL type design of the bismide lasers promises larger output power and better beam quality. Using bismides as materials for the active area of the devices will allow to extend their operation range into the NIR and MIR wavelength ranges.

Benefits: The primary benefits are:

1. The successful work on the proposed Project would help the CPST group in joining pan-European research activities in the future.
2. The development of new optoelectronic devices for gas sensors, biomedicine, etc. will strengthen the position of the Lithuanian research group as one of the world leaders in the field of the bismide applications.
3. Newly developed infrared lasers and light emitting diodes could then be implemented in various instruments and systems that could result in increase of added value of Lithuanian industry.

- ⦿ **Bismide based solar cells:** materials with ~1 eV energy bandgap for highly efficient multijunction (3J or 4J) photovoltaic solar cells.
- ⦿ **Photodiodes and focal-plane-arrays:** sensitive at infrared wavelengths up to 4 μm

Desired contacts

- ⦿ **Partner 1:** Laser System and/or Solar cell Integrators
 - ⦿ **Supplier 1:** Companies working in analytical equipment assembly or with InP technology.
 - ⦿ **Customer 1:** Aeronautics, analytical instrument manufacturer, communication equipment developer. Companies who are working in developing space exploration technologies. Enterprises working in Laser System and/or Solar cell integration.
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FIZINIŲ IR
TECHNOLOGIJOS MOKSLŲ
CENTRAS
