



Laser DUV(4H) polishing



smart

advanced manufacturing

TOOLAS - Laser Micromachining Cluster

Toolas



Website: www.toolas.eu

- **5 years of operation** (established in 2015)
- **68 employees** (photonics, engineering, coating and IT professionals)
- **8.5M € turnover** (in 2019)
- **>11M € investment into R&D** (till 2021)
- **6 members** (Ados-Tech, Direct Machining Control, Evana Technologies, Optonas, Optogama, Visorai Information Technology Park)
- **80% export share** (export to over 20 countries worldwide, including EU, USA, China, Taiwan, S. Korea and Japan)

Products & Services:

1. Coatings on optical elements & crystals: long life, high laser damage threshold, AR, BBAR, HR, PR, beam splitter coatings
2. Optical components & crystals
3. Laser beam delivery devices
4. Laser processing tools, prototyping & equipment
5. Metrology and quality assurance: for laser and optical components, micromachining process & laser processing tools
6. IR, multispectral imaging devices with AI, thermal detection and imaging technologies
7. Advanced machine vision system design & manufacturing
8. Ultrafast laser processing technology & services (micromachining & additive manufacturing)
9. Specialized/customized software to control your laser machining process
10. Laser processing system integration
11. Laser micromachining engines & systems

R&D expertise:

- Optical design: low- and high-power, diffraction-limited optical design development and customization solutions
- Development, production and customization solutions of diode-pumped solid-state lasers
- RDI activities in the fields of laser micromachining, laser source development
- Technologies: Micro-cutting, micro-drilling, micro-milling, micro-structuring: hard and soft materials; surface texturing, 3D printing
- Optomechanical engineering: design, development, customization solutions & manufacturing

Applications:

- Medical
- Semiconductors
- Vision
- Space
- Security & Defense
- Other

About TOOLAS

Skilled and educated photonics, engineering, coating and IT professionals together with VITP established TOOLAS cluster in 2015 in Lithuania. Cluster provides laser technology based solutions for precise micromachining and laser additive manufacturing. Main cluster competences are focused on dedicated products and services as well as R&D and related technology transfer and dissemination actions. Companies work together in a way that changes concurrence into co-currence and creates unique solutions.

Dedicated laser micromachining solutions are delivered to more than 20 countries worldwide, including EU, USA, China, Taiwan, S. Korea and Japan for both industrial and scientific use. Majority of applications are related to laser surface micro-structuring, micro-drilling, cutting and 3D printing of glasses, semiconductors, metals, ceramics and polymers. We are proud that our technologies are already implemented in medical, semiconductors, vision, space, security & defense and few other end use applications.

Toolas cluster consists of 6 members delivering products and services from optical components, coatings up to laser micromachining technologies, laser workstations including engineering and design services. Toolas members are: Ados-Tech, Direct Machining Control, Evana Technologies, Optogama, Optonas, Visoriai Information Technology Park and partners from Vilnius university, Center for Physical Sciences and Technology, Light Conversion, Ltd.

PROPOSAL INTRODUCTION (I)

Vision: main project goal

Feasibility study and development of the DUV(4H) femtosecond laser polishing technology for optical quality surfaces. We plan to provide proof of concept for laser polishing technology applying femtosecond DUV (4H) laser beam. Further will be developing prototype and industrial version of the tool for technology implementation.

Motivation: why the project is necessary

With positive result of the project we expect significant contribution to micro-optics manufacturing industry as single optical parts as well as integrated into chipset micro-opto-electronics devices for a number of applications for sensor, visualisation industries for consumers in a broad range of industries. Resulting in enabling of increase life and business environment quality with providing sustainable green environment.

Content: which are the developments to be made in the project

Proof of concept, means to confirm applicability of DUV(4H) femtosecond laser polishing technology for micro-optics surface polishing. Prototype system development and industrial tool development for efficient, precise and fast polishing process.

PROPOSAL INTRODUCTION (II)

Expected outcome: descriptions of the results to be obtained in the project
The feasibility demonstration of the DUV (4H) femtosecond laser polishing technology; process and parameter optimization for certain goal; further evaluation of required system and technology flexibility for certain applications. Developing and obtaining the recipes for most demanded cases. Prototype and/or industrial version of the toll demonstration.

Impacts: what will be the expected market impact of the project
With growing micro-opto-electronics industries optical parts close to precision of theoretical simulation enable functionality of micro-opto-electronics devices to be super precise, reliable and efficient. In the case of successful result market impact should be significant as markets of the industries we touch combined are multibillion of size.

Schedule: start and end dates for the project. Duration.
September 1, 2021-August 31, 2023, 2 years.

PARTNERS

Current Consortium: list of partners already involved in the project

1. TOOLAS cluster,
2. Center for Physical Sciences and Technology,
3. Vilnius university,
4. Light Conversion, Ltd.

Partner search: type of partner searched and countries of origin (if necessary).

Academics, industry and investors partners interested in development and commercialization.



CONTACT INFO

Contact info: of the person coordinating the project proposal

Mrs. Marija Tunkeviciute, TOOLAS cluster coordinator, email: marija@vitp.lt , ph.: +370 637 98059 , www.vitp.lt

Dr. Egidijus Vanagas, project leader, email: vanagas@evanatech.com , ph.: +370 699 99471 , <https://evanatech.com/>

Mokslininku str. 2A, 08412 Vilnius, Lithuania

