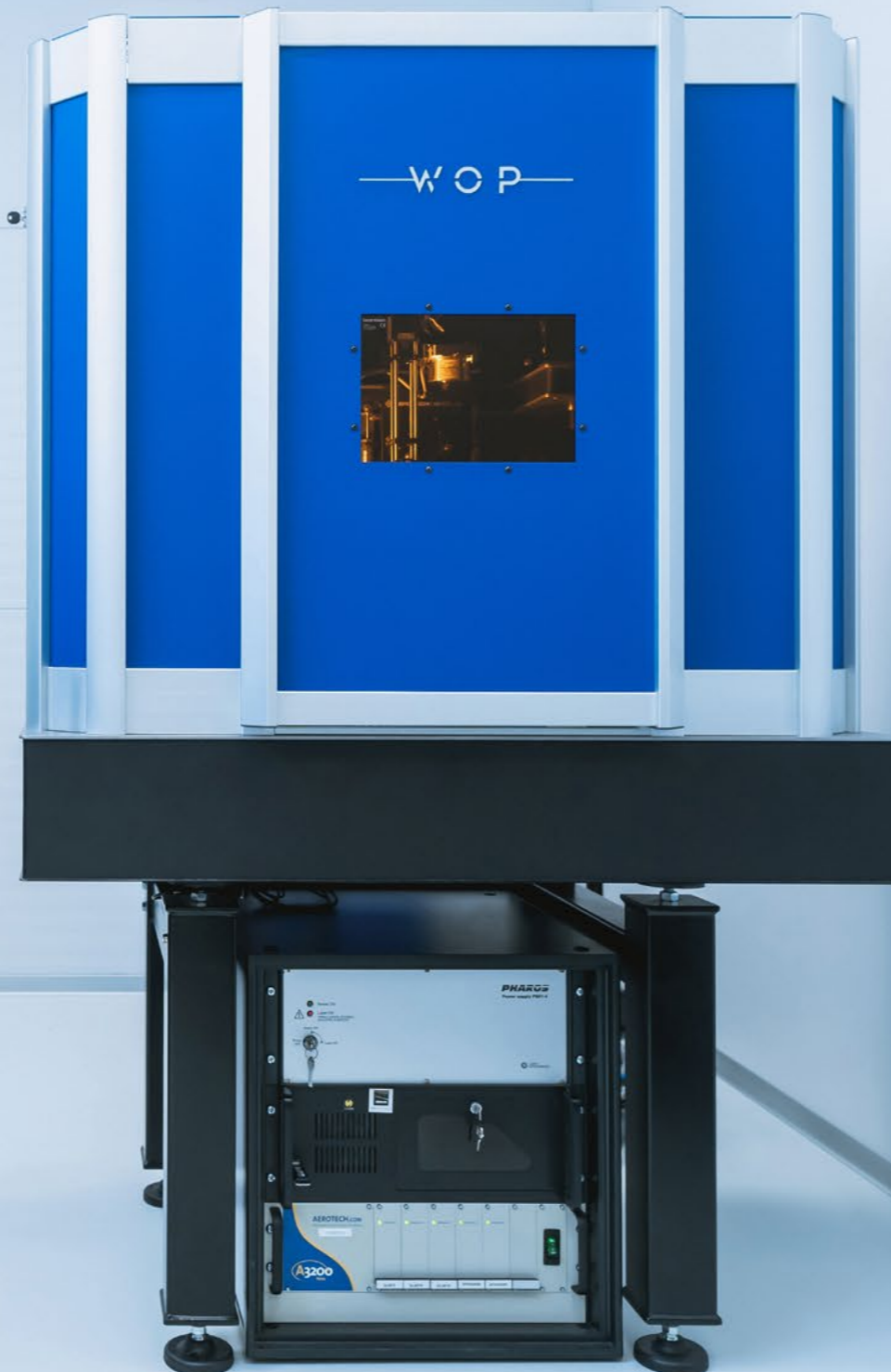






# FemtoLAB

All-in-one R&D platform  
for laser micromachining



-  Rapid prototyping
-  Combined processes
-  Submicron resolution
-  Novel approach

[sales@wophotonics.com](mailto:sales@wophotonics.com)  
[www.wophotonics.com](http://www.wophotonics.com)

# FemtoLAB

A perfect choice for scientific laboratories and R&D centers

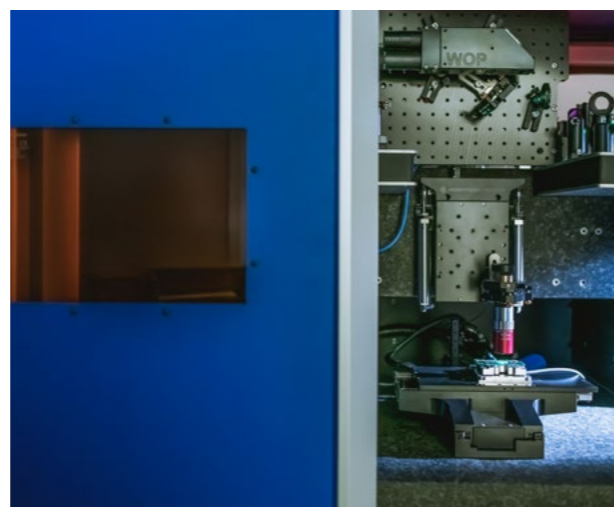
Working in the femtosecond laser field and exploring various research areas, it is crucial to have machine flexibility to tune it for different applications.

With an extensive background in process development WOP | Workshop of Photonics understands how critical it is to match the demand of different research teams involved and enable their all needs.

Herewith we offer FemtoLAB – a femtosecond laser micromachining workstation – for a universal use.

## Key applications:

- Surface and volume micro- and nano- structuring
- Femtosecond laser ablation (FSLA)
- Laser grooving
- Multiphoton polymerization (MPP) | direct laser writing (DLW)
- Laser cutting & drilling
- Micromachining on optical fibers



# Technical specifications

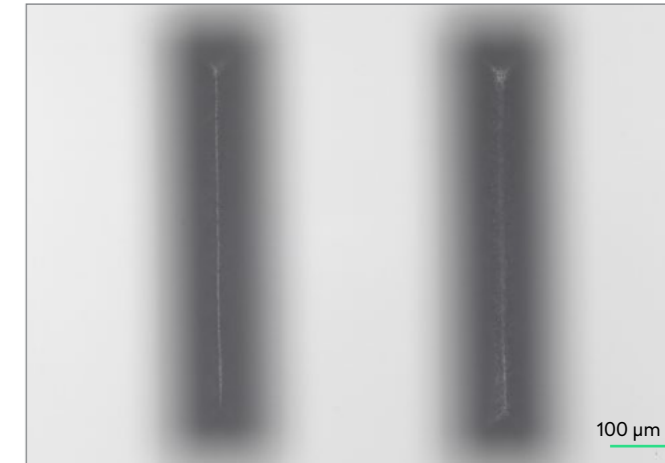
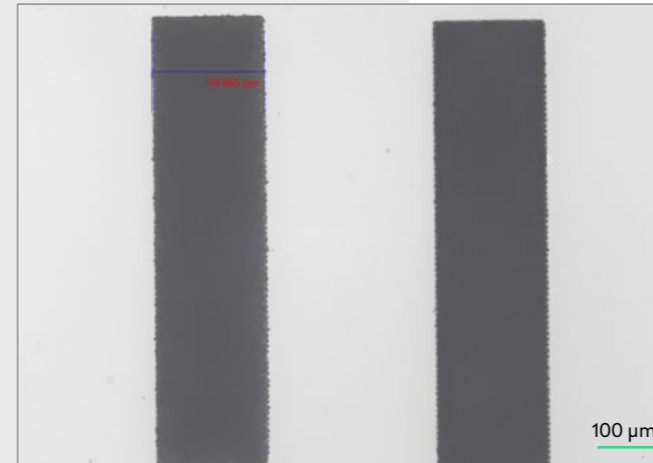
<b>Recommended materials</b>	All materials: glass, sapphire, silicon, ceramics, metal, plastic, optical fibers etc.
<b>Laser</b>	High power ultrashort pulse IR, Green, UV laser
<b>Optical path selection</b>	Automated
<b>Samples size</b>	Compatible with up to 160 mm x 160 mm designs
<b>Smallest feature size</b>	200 nm
<b>Positioning system</b>	XYZ mechanical axes, positioning accuracy +/- 0.3 µm featuring continuous wafer level patterning
<b>Scanning system</b>	Galvo system for all laser wavelengths
<b>Vision</b>	Real-time visualisation and positioning camera with feature recognition
<b>Metrology</b>	Integrated microscope
<b>Sample handling</b>	Manual with automatic alignment
<b>Holder</b>	Sample holder for flat structures (vacuum suction based) with additional holder for optical fibers
<b>Fume extraction system</b>	Included
<b>Accessories</b>	Power control, polarization state control
<b>Software</b>	Entire system control via single GUI.
<b>Supported file formats</b>	- 2D/3D model import: STL, DXF, DWG, AMF, PLT, FAB - Bitmap support: BMP, GIF, JPG, JPEG, PNG - Text files as a table array: TXT, RTF, TEX
<b>Construction</b>	Granite base with passive vibrations isolation, built on optical table (optional stand-alone design)
<b>Cooling</b>	Water cooled laser, air cooled system and electrical cabinet
<b>Dimensions, mm (L x W x H)</b>	1500 x 1350 x 1400
<b>Weight</b>	1100 kg
<b>Power supply</b>	2x 220 VAC, 16 A

Custom or application optimized design available upon request

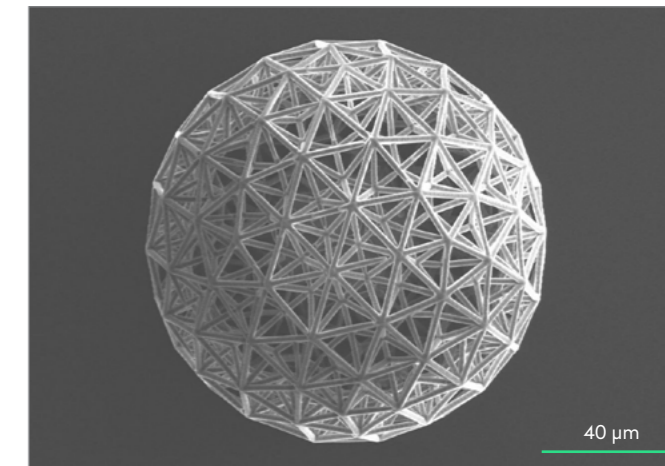
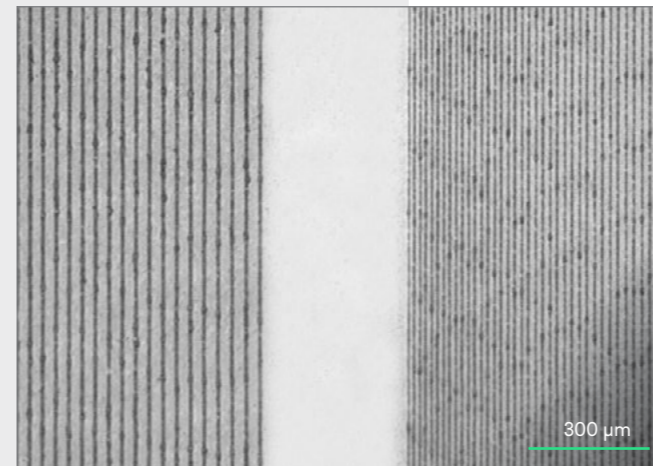
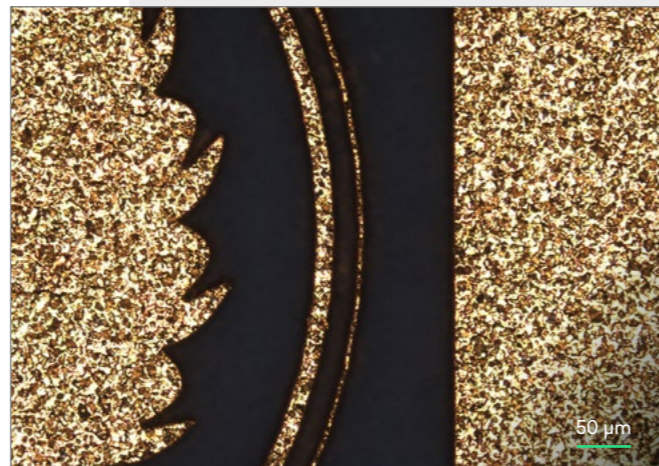
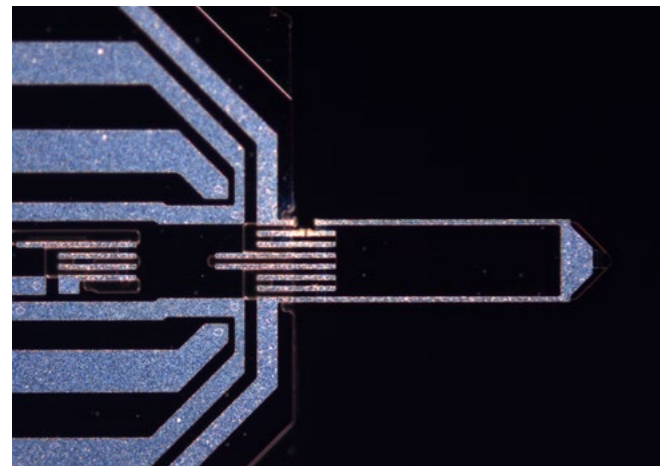
# FemtoLAB

## Benefit from:

- Finest resolution
- Complex 3D objects
- Cost effective
- Small footprint



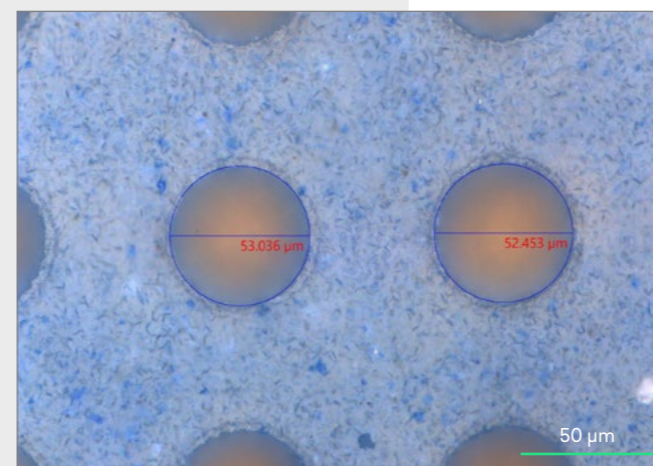
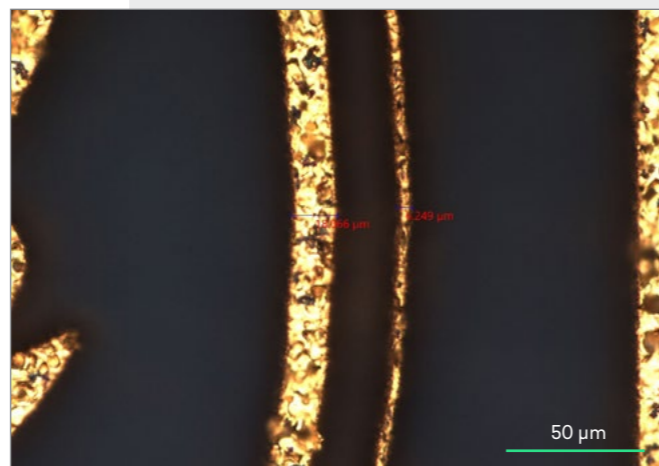
500  $\mu\text{m}$  thick Borofloat 33 glass sample after ablation of 100  $\mu\text{m}$  slit and steam cleaning at 20x, top view surface and bottom of processing.



Laser cutting. Narrow and wide cuts of a silicon cantilever.

Surface and volume micro- and nano- structuring.

Multiphoton polymerization (MPP)



Laser marking. Written directly inside the object (glass) by making refractive index irregularities without damaging the surface.

Laser marking | selective gold layer removal. Gold, thickness  $\sim 10 \mu\text{m}$ , bottom layer ceramic substrate.

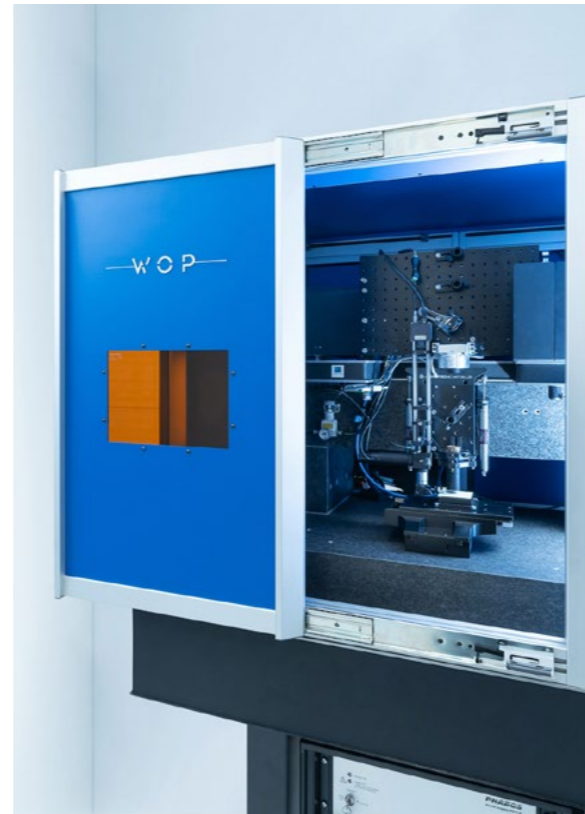
Blind holes drilling in multi layered sandwich like substrate - 25  $\mu\text{m}$  thickness dielectric layer (blue color) drilling to gold layer (yellow color).

# FemtoLAB

FemtoLAB is chosen by the researchers from the world's top universities and R&D centers

“After 10 years of experience, working with your femtosecond system, my honest opinion is more than positive, and we are satisfied with the product. Compared to other systems, ours “full optional facility” allows us to explore valuable processing on many different materials. This is an added value for the research in IIT!”

**Luigino Criante**  
Technology Researcher  
Istituto Italiano di Tecnologia Genoa, Italy



For 20 years, we've been a reliable partner for industry and science customers in solving their micron-scale challenges using novel laser micromachining technologies.



**20 years of expertise**  
in femtosecond laser micromachining with a high focus on glass



**50+ professionals**  
6 Ph.D., 40 M.S. and B.S.



**Patent family of 13 in-house and 2 licensed patents**



**R&D studies**  
continuous projects with academic and research partners

