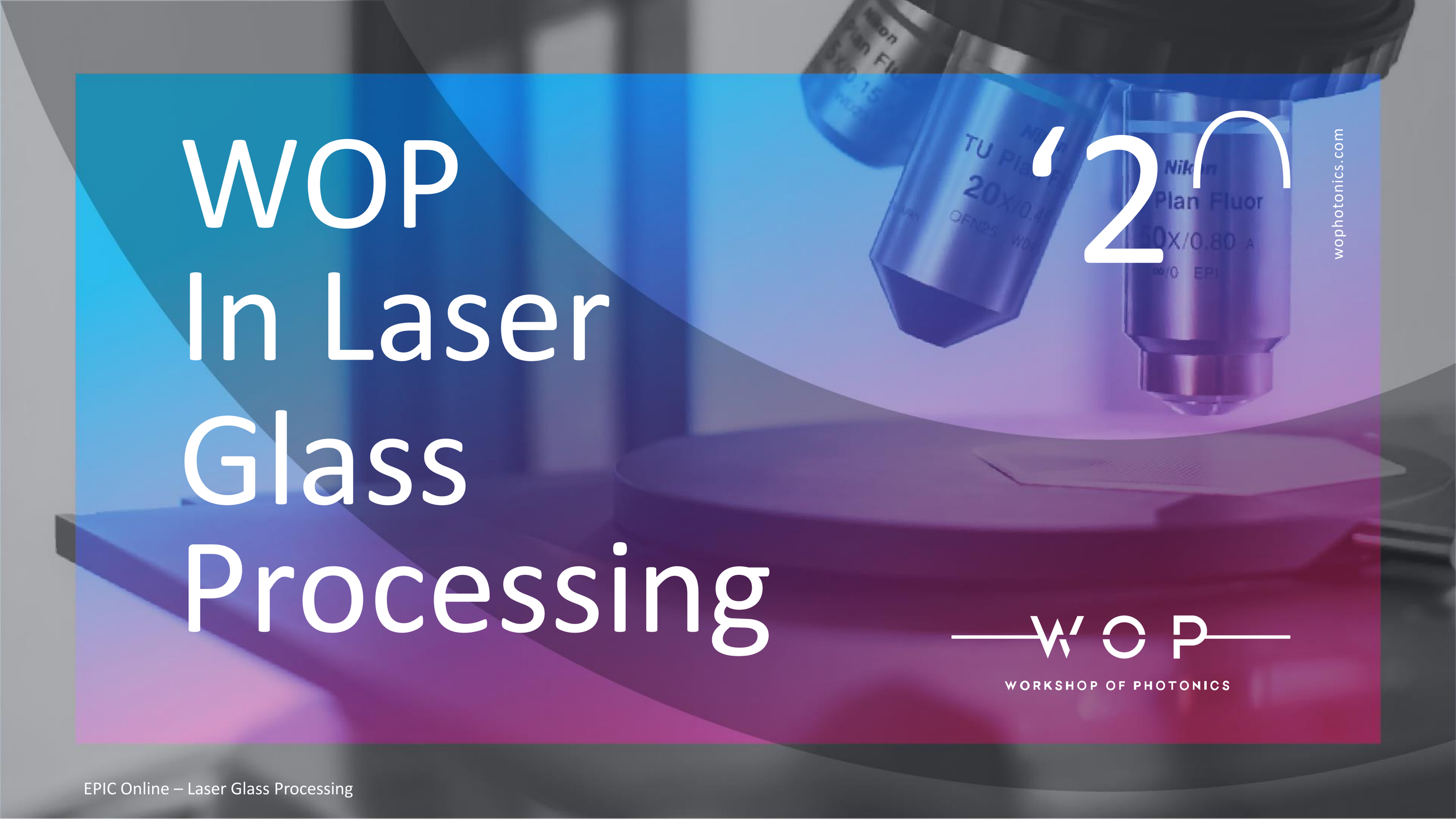
WOP In Laser Glass Processing



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wophotonics.com

WOP

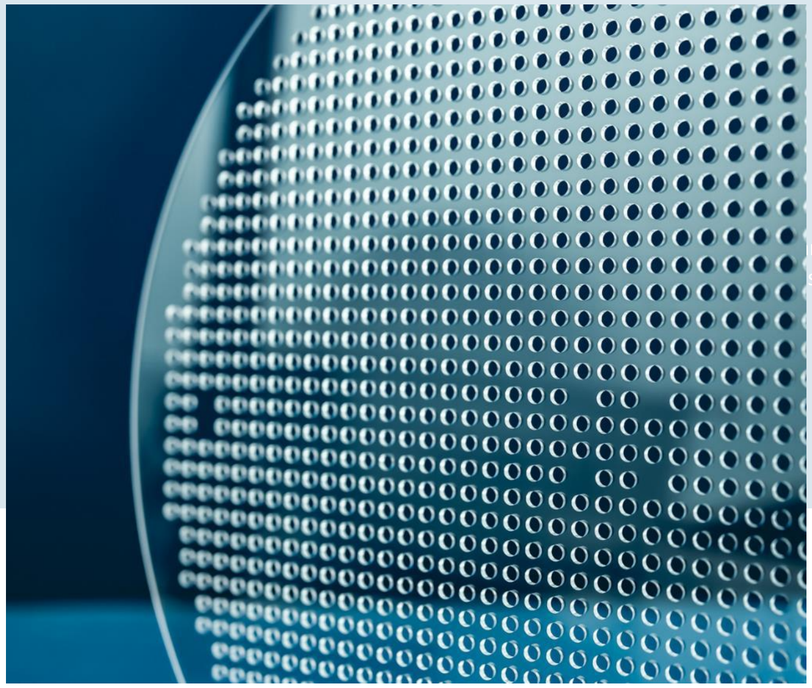
WORKSHOP OF PHOTONICS

Introduction

Our Company

- Privately-owned company, based in Vilnius, Lithuania.
- 6 in-house and 2 licensed patents, enabling cutting-edge technologies.
- R&D studies with more than 10 academic and research partners.
- Developer of laser fabrication processes and technologies
- 9 dedicated setups for femtosecond fabrication
- Wet etching facility
- From feasibility studies to contract manufacturing to laser based machines
- ISO 9001 certified
- Proud member of

Why We Talk Of Glass?



Glass is good for:

- MEMS, Microfuidics and Electronics
- Semiconductor Industry
- Biotechnology
- Integrated Circuit Packaging
- You name it!

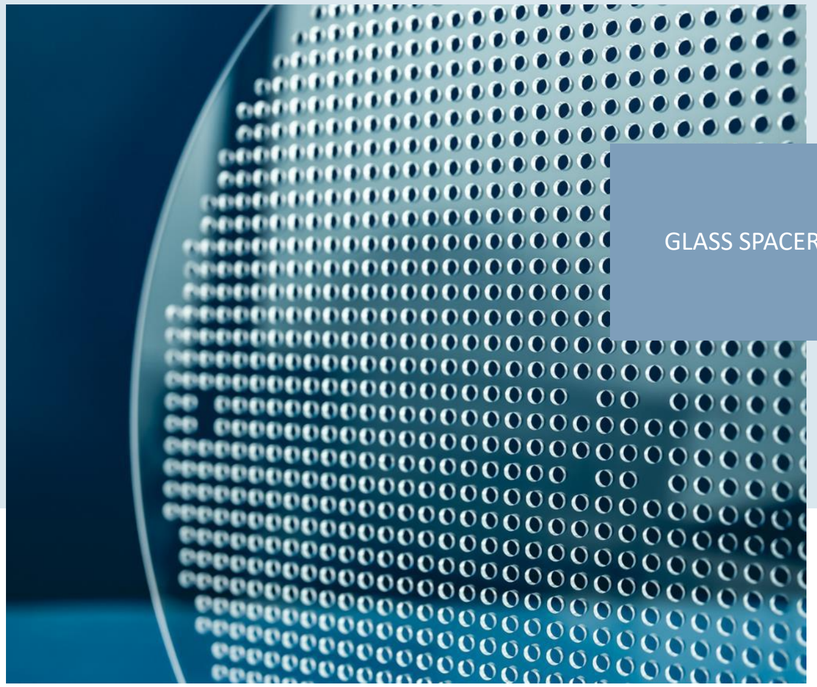
Because of:

- Thermal stability
- Chemical resistance
- Possibility to reuse / cost reduction, less environmental impact
- Ability to withstand heat, energy, radiation exposure, etc., etc.
- Transparency in visible and NIR regions
- Good electrical properties (low loss, high resistance)

Glass Processing Services

Glass processing services

Exceptional Expertise



- Variety of suppliers: Corning, Schott, Hoya, AGC, you name it!
- Variety of glasses: borosilicates, alumosilicates, alkali, non-alkali
- Wafer size - up to 200 mm x 200 mm (8”)
- Wafer thickness - from 30 µm to 10 mm

Techniques

- Dicing, scribing, ablation, laser + etching

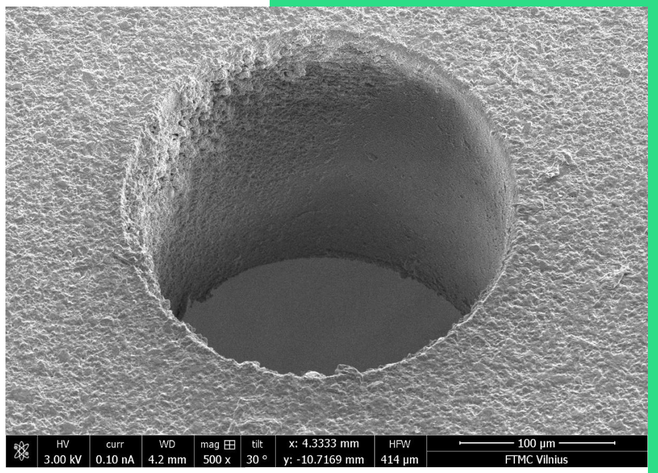
Features

- Round, square and other shape through holes
- Straight hole cross section | no taper
- ≤10 µm chipping > typ. None
- Smooth side walls, Ra<1 µm
- Typical min. hole size 20 µm (round)
- ±3 µm positional accuracy
- No debris on back and front surface
- No sagging around holes
- Aspect ratio up to 1:100
- High throughput and yield
- Ability to work with metallized glasses (e.g. Au, Pt, Ni, Cr, Mo)
- Minimal or no post-processing is needed

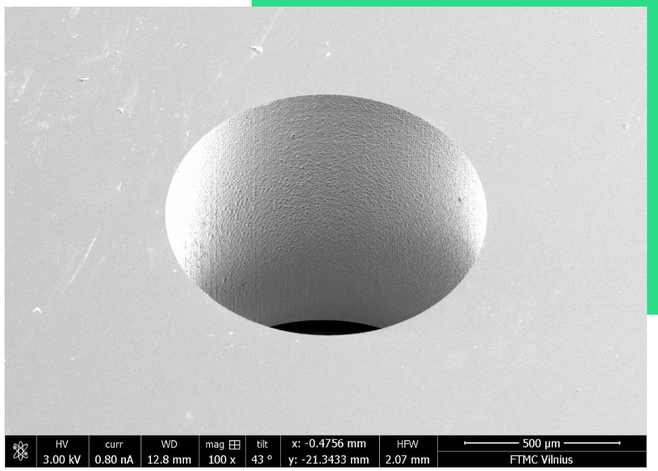
Replacing Ceramics

CERAMIC

Part of Pogo Probe Assembly



AL_2O_3

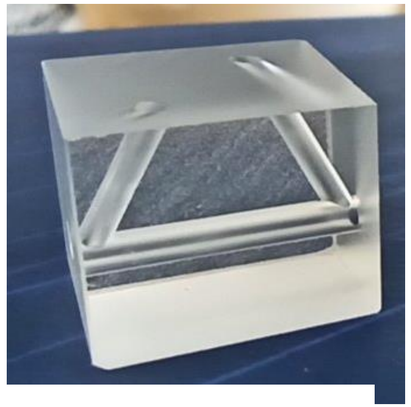


FUSED SILICA

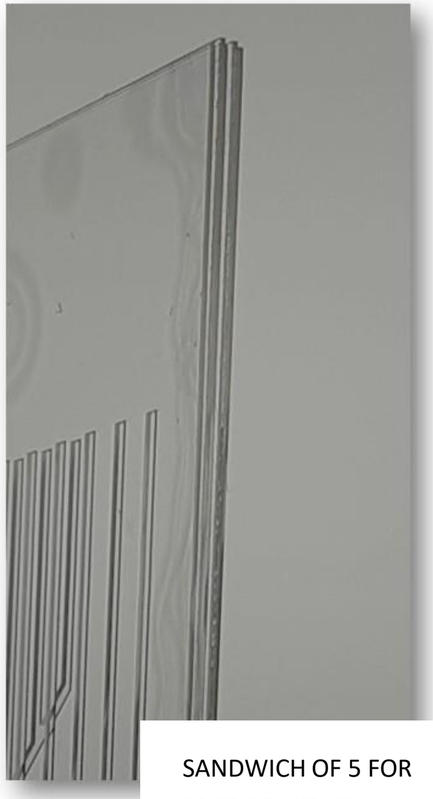
Features

Material	tan δ, E-4 @ 1 MHz	ρ, Ω m @250 C	HV, GPa	Price, €/cm2
Vhandy 96 Al2O3	4	5.00E+12	15	1.10
D263	61	1.60E+08	5.1	0.95
BF33	37	1.00E+08	4.6	0.98
Gorilla 4	130	?	6.2	1.02
Eagle XG	15	1.00E+11	6.4	0.75
SD-2	400	4.00E+09	6	1.10
Corning 7980 HPFS	0.15	1.00E+14	4.9	1.20

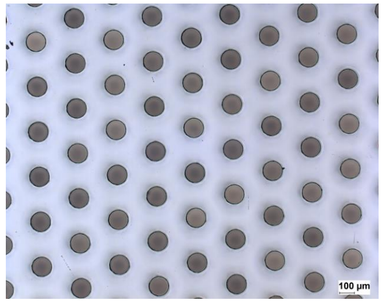
Not Only Simple Holes

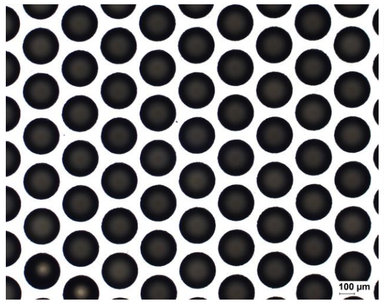


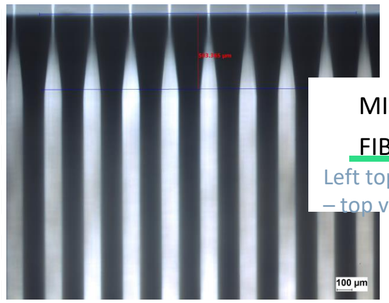
SKEWED CHANNELS



SANDWICH OF 5 FOR MICROFLUIDICS







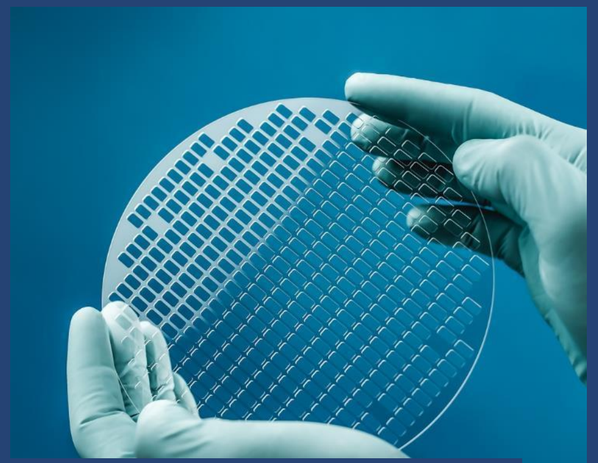
MICROCHANNEL AREA FOR FIBER POSITIONING

Left top – bottom view, bottom left – top view, bottom right – side view

If you decided going for glass, just know:

- You have a partner ready to develop a process/technology for you
- You get a lot of what laser + wet etching or just femtosecond laser can do with glass
- Before you go for volume production, you may get contract manufacturing service
- You can promise your customers up to 1000 pcs of 8“ wafers fabricated
- You can expect free form cuts (holes, channels) of size down to 20 µm and thickness of the workpiece up to 15 mm
- You may expect fast turn around time for your orders

Solutions & Services



CONTRACT MANUFACTURING

Services for glass, sapphire, ceramics, fiber processing

LASER MACHINES

Development and production of custom ultra short pulse laser micromachining workstations

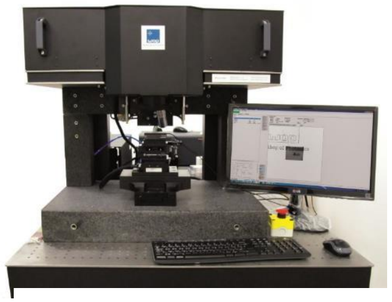
SPECIAL OPTICS

Space-variant retarders and other small-scale production

TECHNOLOGY FOR CUTTING GLASS & SAPPHIRE

Industrial laser micromachining solutions & technologies – cutting, scribing, drilling, etc.

Laser Machines



FEMTOLAB KIT

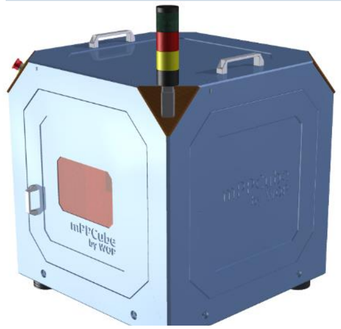
Laser micromachining workstation that can be installed next to customers' laser source

FEMTOLAB

Laser micromachining system for scientific laboratories and R&D centers

FEMTOFAB

Laser micromachining system, designed for a specific industrial process



MPP CUBE

Cost effective 3D additive solution for science and industry customers

Features

- High fabrication speed – up to 300 mm/s (more on request)
- Fabrication of complex objects with submicron resolution
- Minimal heat affected zone
- Precise object positioning with submicron accuracy
- High-performance galvanometer scanners
- Pulse density control
- Synchronization of laser pulses with moving object in space and time domains
- Original software interface for control of all integrated hardware devices

WORKSHOP OF PHOTONICS

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