femtika

3D glass
micro-processing

micro-mechanics fiber alignment micro-components microholes arrays / TGV

TURNS OUT GLASS CAN BE LIKE THAT

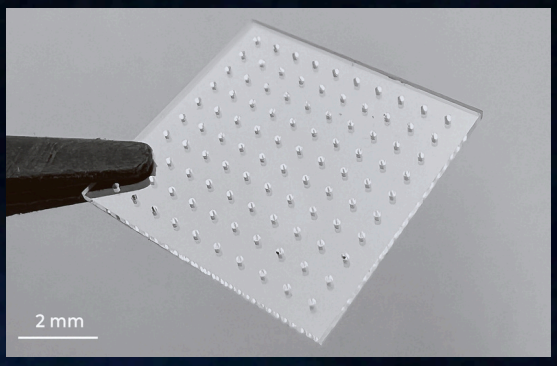


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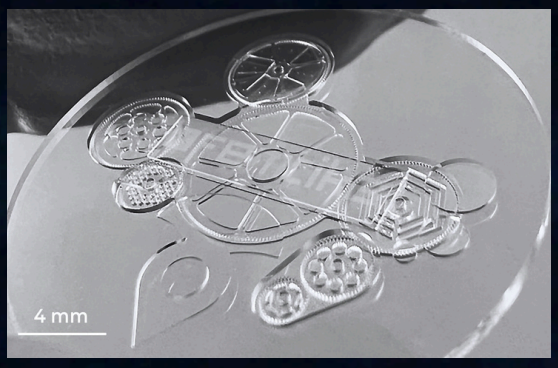
laser machines
& services

Production samples

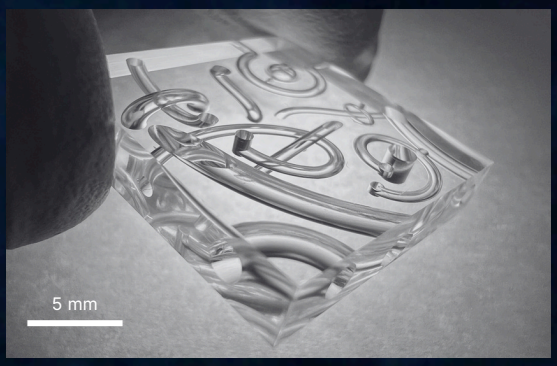
The equipment your designs has been waiting for



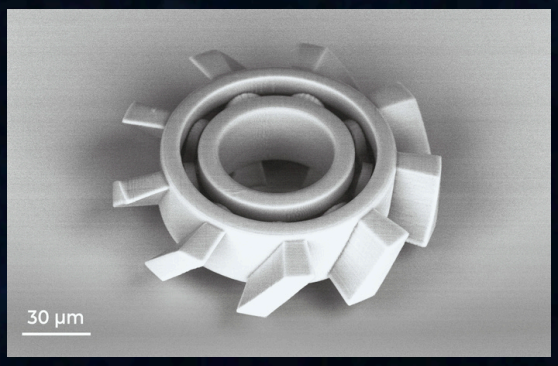
Through-glass vias (TGVs)



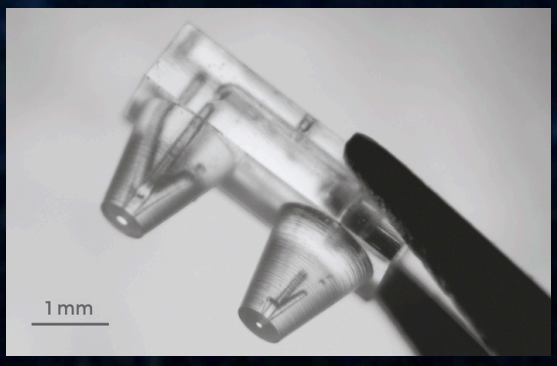
Gear system



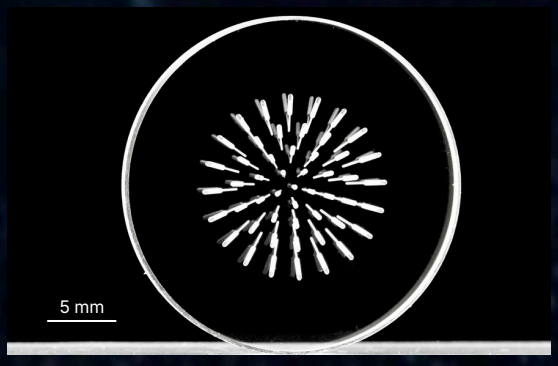
Free form microchannels



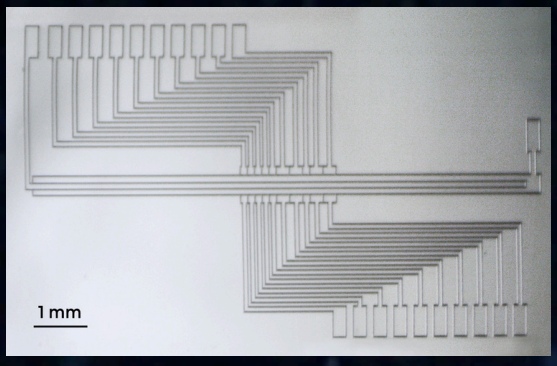
Mechanical bearing



Nozzle



Angled fiber array



Microchannels



Titanium coloring

GLASS LASER MACHINE

Ideal for transparent material micro-processing

- Automatic surface detection
- Multi-scale glass processing from cm to µm
- Effortless fabrication mode switching
- Real-time process monitoring
- Self-aligning optical system



PROCESS SPECIFICATIONS

Technology	Selective laser induced etching (3D), ablation (2D), refractive index modification
Materials	Fused silica, Borosilicate, Alkaline-free boro-alumino-silicate glass
Min. feature size	> 1 µm
Surface roughness	200 nm
Max. object height	20 mm
Aspect ratio	1:200
Min. hole diameter	5 µm

TECHNICAL SPECIFICATIONS: SELECTIVE LASER INDUCED ETCHING

Femtosecond laser source	Wavelength	1030 ± 10 nm
	Max. average power	10 W
	Repetition rate	100 kHz - 1 MHz
	Pulse duration	400 fs - 4 ps
Positioning stages (XYZ)	Travel (XYZ)	120 mm × 120 mm × 60 mm*
	Accuracy (XYZ)	± 0.5 µm
	Maximum speed (XY no load)	350 mm/s
Galvano scanners	Accuracy	50 µrad
	Repeatability	0.4 µrad RMS

**Custom travel range options: 160x160, 300x300*

LASER NANOFACTORY

Hybrid machine for R&D and custom manufacturing

- Add-ons tailored for diverse applications
- Additive & subtractive processing in 1 setup
- Autofocus, self-aligning optics, and high-sensitivity monitoring
- Processes glass, polymers and other materials
- User-friendly software for design and manufacturing



PROCESS SPECIFICATIONS

Technology	Selective Laser Etching (3D)	Multiphoton Polymerization (3D)	Ablation (2D)
Materials	Fused silica, Borosilicate glasses	SZ2080, Ormocers	Most solid materials
Min. feature size	> 1 µm	200 nm	> 1 µm
Surface roughness	200 nm	<20 nm	<200 nm
Max. object height	20 mm	0,5 mm	Material-depended
Aspect ratio	1:200	1:50	1:10
Min. hole diameter	5 µm		

TECHNICAL SPECIFICATIONS: HYBRID FABRICATION

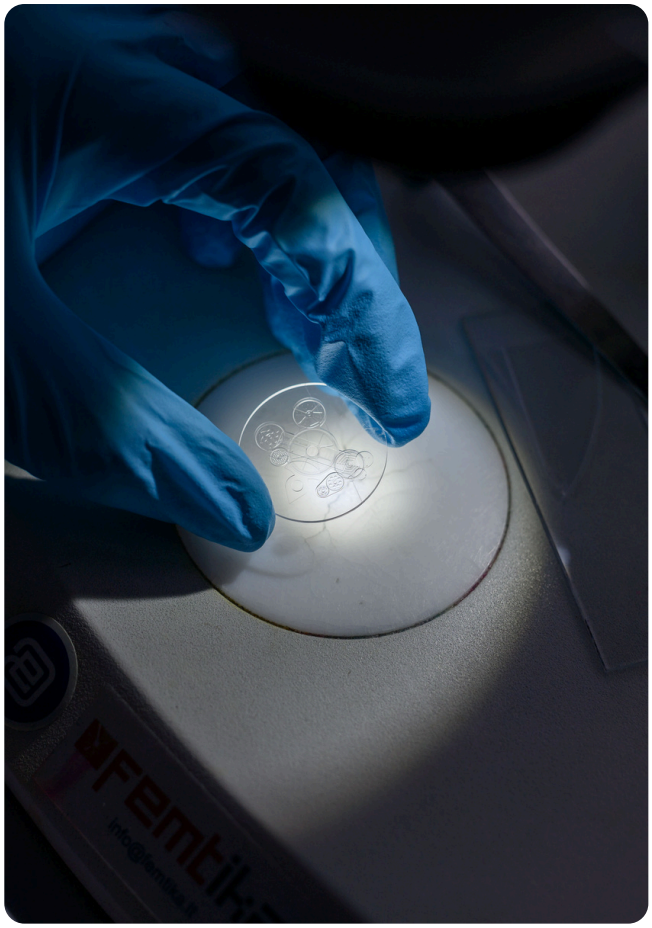
Femtosecond laser source	Wavelength	1030 ± 10 nm & 515 ± 10nm
	Max. average power	10 W @1030 nm, 5 W @515 nm
	Repetition rate	Single-shot - 1 MHz
	Pulse duration	250 fs - 10 ps (tunable)
Positioning stages (XYZ)	Travel (XYZ)	160 mm × 160 mm × 60 mm*
	Accuracy (XYZ)	± 0.3 µm
	Maximum speed (XY no load)	350 mm/s
Galvano scanners	Accuracy	50 µrad
	Repeatability	0.4 µrad RMS

**Custom travel range options: 160x160, 300x300*

CM SERVICES

Contract manufacturing for 3D glass micro-parts batch production

Produce high-precision micro-structured parts without upfront machine investment. Our contract manufacturing service leverages the same advanced femtosecond laser technology built into our machines — ideal for batch production and a great way to evaluate the technology before investing in your own system.



WORKFLOW

1.INQUIRY & EVALUATION

Reviewing your enquiry, signing NDA, and conducting technical feasibility assessment.

2.PREPARATION

We prepare the “recipes" and 3D models, source and inspect materials needed for production.

3.PRODUCTION: LASER

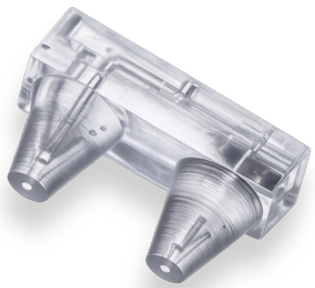
Laser structuring is carried out based on the prepared setup.

4. RODUCTION: ETCHING

Laser-processed parts are etched using chemicals to reveal final 3D structures.

5.INSPECTION

Produced parts are inspected; the process is adjusted for optimal quality and precision.



6.PACKAGING & DELIVERY

Products are safely packed and sent to the customer.

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3D glass
micro-processing

watchmaking medical photonics biotech quantum micro-electronics

FREE-FORM CHANNELS

channels down to
∅ 5 µm

TRUE 3D STRUCTURES

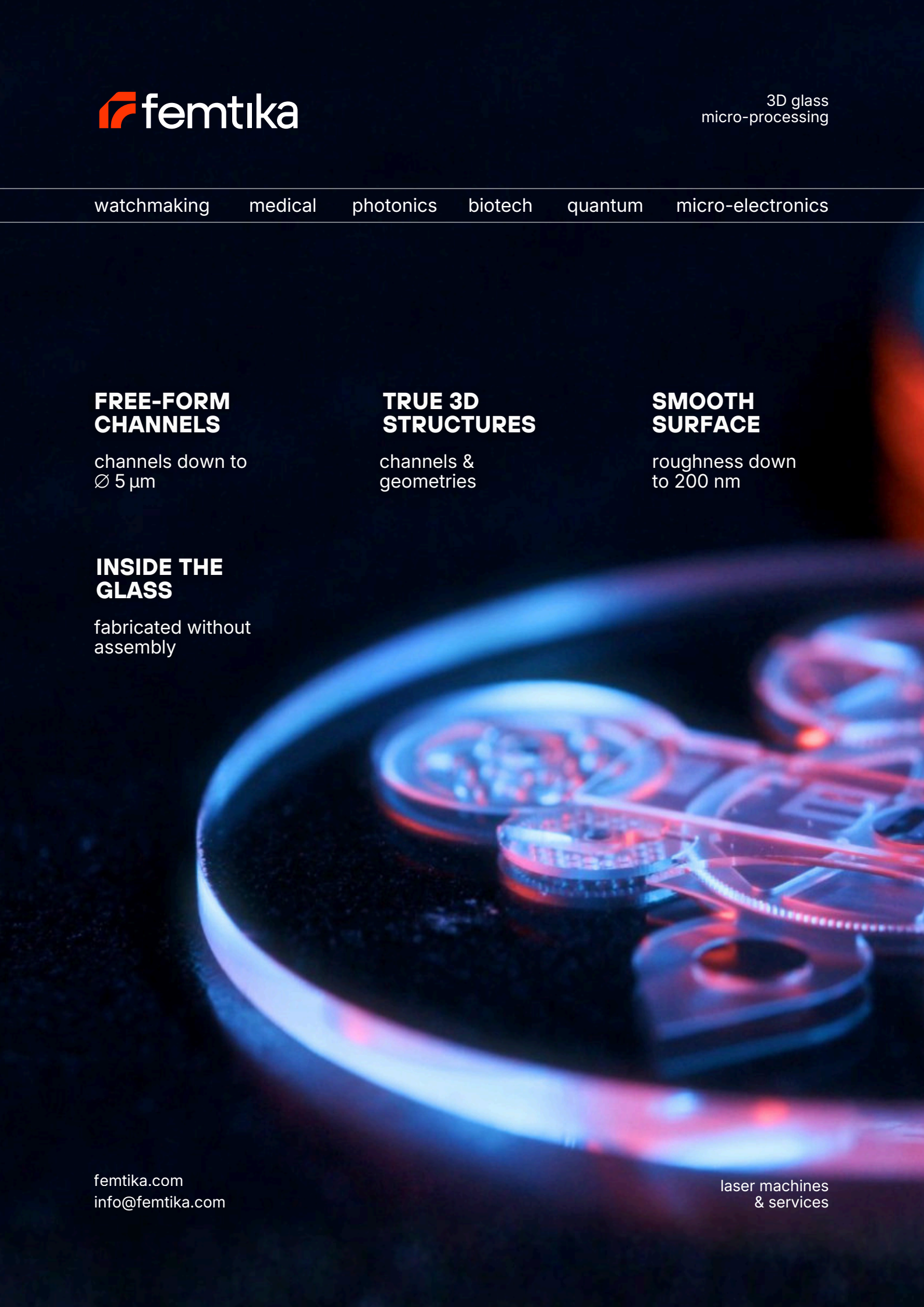
channels &
geometries

SMOOTH SURFACE

roughness down
to 200 nm

INSIDE THE GLASS

fabricated without
assembly



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laser machines
& services