EXAMPLES OF INDUSTRIAL APPLICATIONS

Brittle & highly thermal-sensitive material cutting

Multi-pass cadmium tungstate cutting.
No cracks. All thermal trace effects eliminated.
Source: Micronanics Laser Solutions Centre.

Stainless steel stent cutting

Stent cut using CARBIDE laser.
Source: Amada Miyachi America.

Glass needle microdrilling

Glass needle microdrilling.
Source: Workshop of Photonics.

Steel drilling

Taperless hole microdrilling in stainless steel alloys.
Source: Workshop of Photonics.

Various type glass drilling

Various glass drilling.
Source: Workshop of Photonics.

Nanodrilling of fused silica

Longitudinal section of a single void.
Milling of complex 3D surfaces

3D milled sample in copper. Zoom in SEM image.

Selective Cr thin film ablation

Cr thin film ablation for creation of LiNbO₃, micro-disk resonator. (a,b) SEM images, (c) AFM image of micro-disk wedge, (d) optical images of micro-disk resonators with different diameters.

Terahertz broadband anti-reflection structures

Fabricated moth-eye 3D profile, taken by laser scanning microscope.

Friction and wear reduction

(a) Schematic of the laser treatment, (b) laser patterning strategy, (c) SEM image of induced LIPSS.

3D waveguides

3D waveguides fabricated in fused silica glass.
Source: Workshop of Photonics.

Surface-enhanced Raman scattering (SERS) sensors fabrication

SEM image of the Ti-6Al-4V (TC4) surface after irradiation with progressive laser scan.
Lab-on-chip channel ablation and welding

Welding of transparent polymers for sealing of microfluidic devices. Top view on a sealed microfluidic device (left), welding seam (bottom right).

3D micro printing using multi-photon polymerization

Various 3D structures fabricated in SZ2080 polymer using multi-photon polymerization – nanophotonic devices, microoptics, micromechanics.
Source: Femtika.

Bragg grating waveguide (BGW) writing

(a) First-order Bragg gratings inscribed in waveguide, (b) Resonant spectral transmission of inscribed BGW.

3D glass etching

Various structures fabricated in fused silica glass.
Source: Femtika.

Birefringent glass volume modifications

Form induced birefringence-retardance variation results in different colors in parallel polarized light.
Source: Workshop of Photonics.

3D multi-photon polymerization

Various 3D structures fabricated in SZ2080 polymer using multi-photon polymerization.
Source: Workshop of Photonics.