Examples of Industrial Applications

Birefringent volume modifications in glass

DO YOU HAVE A FEMTOSECOND? HERE’S SOMETHING FOR YOU.

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

High precision glass drilling

Various glass drilling.
Source: Workshop of Photonics.

Glass needle microdrilling

Glass needle microdrilling.
Source: Workshop of Photonics.

Steel drilling

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

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.
EXAMPLES OF INDUSTRIAL APPLICATIONS

**Flint Oscillators**
- I-OPA Optical Parametric Amplifiers
- Carbine Lasers
- Pharos Lasers

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**Milling of complex 3D surfaces**

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

**Stainless steel polishing**

SEM image collage of structures ablated in stainless steel, before and after laser polishing using GHz burst (from left to right).

**Selective ablation**

Lithium niobate microdisks fabricated using selective ablation.

**High-contrast marking**

High-contrast black-and-white marking on stainless steel clips using the BiBurst option.

**Friction and wear reduction**

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

**SERS sensor fabrication**

SEM image of the Ti-6Al-4V (TC4) surface after irradiation with progressive laser scan.
EXAMPLES OF INDUSTRIAL APPLICATIONS

**FLINT OSCILLATORS**

I-OPA OPTICAL PARAMETRIC AMPLIFIERS

CARBIDE LASERS

**PHAROS LASERS**

**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 waveguides**

3D waveguides fabricated in fused silica glass.

Source: Workshop of Photonics.

**Fiber cleaving**

Fiber end face after laser-based scribing (left) and its surface profile (right).

Source: RMIT University, Melbourne.

**3D glass etching**

Various structures fabricated in fused silica glass.

Source: Femtika.

**Bragg grating waveguide (BGW) writing**

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


**3D multiphoton polymerization**

Various 3D structures fabricated in SZ2080 polymer using multi-photon polymerization.

Source: Workshop of Photonics.
**Polymer polishing**

Polished curved surface and surface roughness measurements before and after polishing with GHz BiBurst.


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**QR code marking**

High contrast QR codes markings on various samples. Size 3 × 3 mm. Sky-writing mode enabled.

Source: Light Conversion apps lab.

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**Color center formation**

Illustration of the laser writing of color centers (left), silicon carbide containing arrays of laser-written color centers (right).


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**Glass welding**

Example of 1 mm thick fused silica glass welding.

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**Glass cutting**

Example of glass cutting. Source: Citrogene.

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**Precision parts cutting from brass**

Example of gear cut from brass. Source: Lasea.